Journal of The Chemical Society

C

Organic

Indexes

1970

THE CHEMICAL SOCIETY

Patron

Her Majesty the Queen

President

G. Porter, M.A., Ph.D., Sc.D., F.R.S.

Vice-Presidents
who have filled the office of President

H. J. Emeléus, C.B.E., M.A., D.Sc., F.R.S.
Sir Ewart Jones, M.A., D.Sc., F.R.I.C, F.R.S.
Sir Harry Melville, K.C.B., Ph.D., D.Sc., F.R.S.
Sir Ronald Nyholm, D.Sc., F.R.I.C., F.R.S.
J. Monteath Robertson, C.B.E., M.A., LL.D., F.R.S.
Lord Todd, M.A., D.Sc., F.R.I.C., F.R.S.

Vice-Presidents

D. H. R. Barton, D.Sc., Ph.D., Sc.D., F.R.S.
D. M. Hodgkin, O.M., M.A., D.Sc., F.R.S.
G. W. Kenner, Ph.D., Sc.D., F.R.S.
M. Stacey, C.B.E., Ph.D., D.Sc., F.R.S.
Sir Harold Thompson, C.B.E., D.Sc., F.R.S.

Honorary Treasurer

J. W. Barrett, Ph.D., A.R.C.S., F.R.I.C.

Honorary Secretaries

C. Eaborn, Ph.D., D.Sc., F.R.S.
W. Klyne, M.A., D.Sc., F.R.I.C.
D. H. Whiffen, M.A., D.Phil., F.R.S.

Ordinary Members of Council

M. F. Ansell, Ph.D., D.Sc., F.R.I.C.
K. W. Bentley, D.Phil., D.Sc., F.R.S.E.
J. C. Bevington, Ph.D., D.Sc., F.R.I.C.
C. F. Cullis, D.Sc., D.Phil., F.R.I.C.
A. G. Davies, Ph.D., D.Sc., F.R.I.C.
E. J. Forbes, M.A., B.Sc., D.Phil.
G. W. A. Fowles, Ph.D., D.Sc., F.R.I.C.
P. Gray, M.A., Sc.D., F.R.I.C.
C. H. Hassall, Ph.D., Sc.D., F.R.I.C.
H. G. Heal, B.Sc., A.R.C.S., Ph.D.
B. A. Hems, B.Sc., Ph.D., F.R.S.
C. Kemball, Sc.D., M.R.I.A., F.R.S.E., F.R.S.
G. W. Kirby, M.A., Ph.D.
M. L. McGlashan, M.Sc., Ph.D., D.Sc.
C. W. Rees, D.Sc., Ph.D., F.R.I.C.
A. G. Sharpe, M.A., Ph.D., F.R.I.C.
R. Slack, M.A., D.Phil., D.Sc.
J. C. Speakman, Ph.D., D.Sc.
H. Suschitzky, Ph.D., D.Sc., F.R.I.C.
G. H. Whitham, B.Sc., Ph.D., M.A.
W. Wild, B.Sc., Ph.D., A.R.I.C.

Ex Officio

A. W. Johnson, Ph.D., M.A., Sc.D., F.R.S. (Chairman of the Joint Library Committee)
Sir Ewart Jones, M.A., D.Sc., F.R.I.C., F.R.S. (Chairman of the Publications Board)

General Secretary

J. R. Ruck Keene, M.B.E., T.D., M.A.

Librarian

R. G. Griffin, F.L.A.

Managing Editor

L. C. Cross, T.D., Ph.D., A.R.C.S., F.R.I.C.

© Copyright 1971
by the Chemical Society

INDEX OF AUTHORS, 1970

A

Aberhart, D. J., **Overton,** K. H., and **Huneck,** S. Portentol: an unusual polypropionate from the lichen *Roccella portentosa*, 1612.

Abramovitch, R. A., **Giam,** C. S., and **Poulton,** G. A. Aromatic substitution. Part XXV. Reaction of 3-picoline with some substituted phenyl-lithium derivatives, 128.

Abramson, F. B., **Elliott,** D. F., **Linsay,** D. G., and **Wade,** R. Synthesis of peptides related to bradykinin, 1042.

Acheson, R. M., **Bolton,** R. G., and **Hunter,** I. 1-Hydroxyindoles, and products from the reaction of 2-nitrophenylsuccinic anhydride with fluorosulphonic acid, 1067.

Acheson, R. M., and **Harrison,** D. R. The synthesis, spectra, and reactions of some *S*-alkythiophenium salts, 1764.

Acheson, R. M., and **Jones,** B. J. Addition reactions of heterocyclic compounds. Part XLII. The mechanism of the thermal rearrangement of tetramethyl 7,9-dimethyl-9a*H*-quinolizine-1,2,3,4-tetracarboxylate to the 4*H*-isomer, 1301.

Acheson, R. M., and **Tully,** W. R. Synthesis of some 1,5-benzodiazepin-2-ones, 1117.

Adembri, G., **De Sio,** F., **Nesi,** R., and **Scotton,** M. Tetraacetylethylene: a new intermeditate for synthesising heterocyclic rings, 1536.

Adesogan, E. K., **Okorie,** D. A., and **Taylor,** D. A. H. Limonoids from *Khaya anthotheca* (Welw.) C.DC., 205.

Adesogan, E. K., and **Taylor,** D. A. H. Limonoid extractives from *Khaya ivorensis*, 1710.

Adhikary, S. P., **Lawrie,** W., and **McLean,** J. Dehydrogenation with mercuric acetate in the lupane series. Part III. A revised structure for dehydrolupeol derivatives, 1030.

Ager, E., **Iddon,** B., and **Suschitzky,** H. Polyhalogenoaromatic compounds. Part XI. Some reactions of 2,3,5,6-tetrachloro-4-mercapto- and 2,3,5,6-tetrachloro-4-methylthiopyridine. Part XV. Preparation and reactions of tetrachloropyridine-4-sulphenyl chloride and tetrachloropyridine-4-sulphonyl chloride, 193, 1530.

Aguilar-Santos, G. Caulerpin, a new red pigment from green algae of the genus *Caulerpa*, 842.

Alabaster, R. J., and **Barry,** W. J. Some pyrazolesulphenyl chlorides and derivatives, 78.

Albert, A. The Dimroth rearrangement. Part XII. Transformation by alkali of 4-amino-3-benzyl-1,2,3-triazole and its 5-substituted derivatives into the corresponding 4-benzylamino isomers. Retrogression of this reaction in neutral solvents, 230.

Albert, A., and **Ohta,** K. Pteridine studies. Part XXXIX. Pteridines unsubstituted in the 4-position; a new synthesis from pyrazines, *via* 3,4-dihydropteridines, 1540.

Alder, R. W., **Niazi,** G. A., and **Whiting,** M. C. The chemistry of the benz[*cd*]indazole system. Benz[*cd*]indazole 1-oxide, benz[*cd*]indazole 1,2-dioxide (1,8-dinitrosonaphthalene), and related compounds, 1693.

Aldridge, D. C., and **Turner,** W. B. 9-Hydroxyprehelminthosporol, a metabolite of cochliobolus (*Helminthosporium*) *sativus*, 686.

Metabolites of *Helminthosporium monoceras*: structures of monocerin and related benzopyrans, 2598.

Al-Hajjar, F. H. See **Al-Jallo,** H. N., 2056.

Al-Jallo, H. N., and **Al-Hajjar,** F. H. The condensation of acetylenic esters with ethyl phenylacetates, 2056.

Allen, D. W., **Coppola,** J. C., **Kennard,** O., **Mann,** F. G., **Motherwell,** W. D. S., and **Watson,** D. G. Preparation, reactions, and structure of 5,10-epoxy-, 5,10-epithio-5,10-episeleno-, and 5,10-epitelluro-5,10-dihydroarsanthren, 810.

Allen, F. H. See **Neidle,** S., 2340.

Allison, C. G., **Chambers,** R. D., **MacBride,** J. A. H., and **Musgrave,** W. K. R. Polyfluoroheterocyclic compounds. Part XVII. Preparation and nucleophilic substitution of tetrafluoropyrazine and the orientational effect of substituents in polysubstitution, 1023.

Allison, G. B. See **Bailey,** A. S., 956.

Ames, D. E., and **Griffiths,** N. D. Methylation of 3-hexyloxy-10*H*-pyridazino[4,3-*b*][1,4]benzothiazine, 2672.

Ames, D. E., and **Novitt,** B. Cinnolines. Part XIV. Reductive formylation of cinnolines to 1-formamido-indoles, 1700.

Aminadav, N. See **Klein,** J., 1380.

Anderson, D. J., **Gilchrist,** T. L., **Horwell,** D. C., and **Rees,** C. W. Reactive intermediates. Part X. Synthesis of aziridines from aminonitrenes and olefins, 576.

Andreani, F., **Andrisano,** R., **Della Casa,** C., and **Tramontini,** M. Reactivity of Mannich bases. Part XII. Ring alkylation of aromatic and heterocyclic compounds, 1157.

Andrews, A. T. de B., **Boul,** A. D., **Meakins,** G. D., and **Sledge,** M. J. Hydroxy-steroids. Part XIII. 5β-Ergosta-7,22-dien-3-one and related compounds, 1052.

Andrisano, R., **Della Casa,** C., and **Tramontini,** M. Reactivity of Mannich bases. Part XIII. Mechanism of the reaction between aminomethylnaphthols and benzenethiols, 1866.

Andrisano, R. See also **Andreani,** F., 1157.

Appleton, R. A., **Gunn,** P. A., and **McCrindle,** R. Buffered acetolyses of the toluene-*p*-sulphonates of *exo*- and *endo*-17-norkauran- and 17-norphyllocladan-16-ols, 1148.

Arain, R. A., and **Hargreaves,** M. K. Preparation of optically active 2-bromo-3-methylbutane from 3-methylbutan-2-ol without rearrangement, 67.

Archer, A. W., and **Claret,** P. A. Formation of 2-imino-1,4-benzodioxan and its trimerisation to give a derivative of 1,3,5-triazine, 1296.

Archer, D. A., **Booth,** H., and **Stangroom,** R. D. The thermal decomposition of quaternary ammonium hydroxides. Part IV. Rearrangement of the methohydroxides of *N*-(α-substituted benzyl)-*N*-methylanilines, 2276.

Ardrey, R. E., and **Cort,** L. A. Halogeno-1,4-dioxans and their derivatives. Part V. Bi-1,3-dioxan-2-yl and 2,3,4aα,10aα-tetrahydrobenzo[*b*]-*p*-dioxino[2,3-*c*]-*p*-dioxin, 2457.

Argyropoulos, N. See **Stelakatos,** G. C., 964.
Arient, J. See **Havlíčková,** L., 567, 570.
Armarego, W. L. F., and **Kobayashi,** T. Quinazolines. Part XIV. The absolute configurations of *cis*- and *trans*-(+)- and (−)-decahydroquinazolines and 2-amino-octahydroquinazolines, 1597.
Armarego, W. L. F., and **Sharma,** S. C. 1-Oxoisoindole cations, 1600.
Armstrong, K. J. See **Brophy,** G. C., 933.
Arotsky, J., **Butler,** R., and **Darby,** A. C. Iodination and iodo-compounds. Part III. Iodination of some aromatic nitro-compounds with iodine in 20% oleum, 1480.
Arthur, A. R. J. See **Flowerday,** P., 290.
Arunachalam, T. See **Kasturi,** T. R., 1257.
Askam, V., and **Deeks,** R. H. L. Synthesis of heterocyclic compounds. A cyclisation involving a lactam nitrogen in a derivative of isoquinolin-3-one, 2245.
Aspinall, G. O., and **Bhattacharjee,** A. K. Plant gums of the genus *Khaya*. Part IV. Major component of *Khaya ivorensis* gum. Part V. Further studies on *Khaya senegalensis* gum, 361, 365.
Aspinall, G. O., and **Sanderson,** G. R. Plant gums of the genus *Sterculia*. Part IV. Acidic oligosaccharides from *Sterculia urens* Gum. Part V. Degradation of carboxy-reduced *Sterculia urens* Gum, 2256, 2259.
Aylward, J. B. Hydrazine derivatives. Part II. Oxidation of aldehyde *NN*-disubstituted hydrazones with lead tetra-acetate, 1494.
Aylward, J. B., and **Scott,** F. L. Synthesis and properties of alkyl hydrazonates, 968.
Azoo, J. A., **Bacon,** R. G. R., and **Gupta,** K. K. Metal ions and complexes in organic reactions. Part XIII. Oxidative effects of silver(II) complexes of pyridinecarboxylic acids, 1975.

B

Bacon, R. G. R., and **Maitland,** D. J. Metal ions and complexes in organic reactions. Part XII. Copper-catalysed reaction between 2-bromonitrobenzene and diphenylamine, 1973.
Bacon, R. G. R., and **Pande,** S. G. Metal ions and complexes in organic reactions. Part XI. Reactions in pyridine between copper species and aryl halides, in particular between copper(I) oxide and 2-bromonitrobenzene, 1967.
Bacon, R. G. R. See also **Azoo,** J. A., 1975.
Baddar, F. G., **El-Neweihy,** M. F., and **Loutfy,** R. O. γγ-Disubstituted itaconic acids. Part V. Stobbe condensation of phenyl, *p*-anisyl, and *p*-chlorophenyl isopropyl ketones with diethyl succinate, 620.
Baghos, V. B. See **Gindy,** M., 1905.
Bailey, A. S., **Warr,** W. A., **Allison,** G. B., and **Prout,** C. K. Reaction of picryl azide with *N*-methylindoles: the crystal structure of 1-methyl-2-picryliminoindoline, 956.
Baker, G. B. See **Kingston,** D. G. I., 2574.
Baker, J. A., and **Chatfield,** P. V. Synthesis of derivatives of thiazolo[4,5-*d*]pyrimidine. Part II. 2478.
Baker, R., and **Mason,** T. J. Rigid polycyclic systems. The reaction between cyclopentadiene and acenaphthylene and spectral properties of the adducts and derived alcohols and ketones, 596.
Baker, W., **Downing,** D. F., **Floyd,** A. J., **Gilbert,** B., **Ollis,** W. D., and **Russell,** R. C. Synthesis of isoflavones. Part V. Irigenin and tectorigenin, 1219.
Baláspiri, L. See **Sipos,** G., 1154.
Ballantine, J. A., and **Fenwick,** R. G. A reinvestigation of the structure of indophenine. Some new evidence, 2264.
Ballantine, J. A., **Francis,** D. J., **Hassall,** C. H., and **Wright,** J. L. C. The biosynthesis of phenols. Part XXI. The molecular structure of arugosin, a metabolite of a wild-type strain of *Aspergillus rugulosus*, 1175.
Ballantine, J. D., **Ritchie,** J. P., and **Sykes,** P. J. Synthetic steroids. Part XI. Stereochemistry of the Tiffeneau–Demjanov ring expansion of 5α-cholestan-3-one, 736.
Ballantine, J. D., and **Sykes,** P. J. Synthetic steroids. Part X. Preparation of (3*S*)- and (3*R*)-spiro-[5α-cholestane-3,2′-oxiran] and their corresponding 2α-methyl and 2,2-dimethyl analogues, 731.
Ban, Y. See **Inoue,** I., 602.
Banks, R. E., **Berry,** D., **McGlinchey,** M. J., and **Moore,** G. J. Studies in azide chemistry. Part II. Photolysis of 2*H*-hexafluoropropyl and 2-chloro-1,1,2-trifluoroethyl azide, 1017.
Banks, R. E., **Birks,** L. E., **Bridge,** M., and **Haszeldine,** R. N. Fluoro-olefins. Part VII. Some thermal Diels–Alder reactions of perfluorocyclohexa-1,3-diene, 2539.
Banks, R. E., **Birks,** L. E., and **Haszeldine,** R. N. Polyfluorocyclopentadienes. Part V. Reaction of perfluorocyclopentadiene with *N*-allyltrifluoroacetamide, 201.
Banks, R. E., **Bridge,** M., and **Haszeldine,** R. N. Polyfluorocyclopentadienes. Part IV. Reactions of perfluorocyclopentadiene with diethyl maleate and diethyl fumarate, 48.
Banks, R. E., **Bridge,** M., **Haszeldine,** R. N., **Roberts,** D. W., and **Tucker,** N. I. Polyfluorocyclopentadienes. Part VI. Synthesis of 1- and 5-chloropentafluorocyclopentadiene, 2531.
Banks, R. E., **Cheng,** W. M., **Haszeldine,** R. N., and **Shaw,** G. Heterocyclic polyfluoro-compounds. Part XVIII. Reaction of pentafluoropyridine with chlorine and with bistrifluoromethyl nitroxide, 55.
Banks, R. E., **Field,** D. S., and **Haszeldine,** R. N. Heterocyclic polyfluoro-compounds. Part XIX. Synthesis of and nucleophilic substitution in some 2,4,6-trifluoropyrimidines: formation of trifluoromethylpyrimidines by pyrolysis of tetrafluoropyrimidine, 1280.
Banks, R. E., and **McGlinchey,** M. J. Studies in azide chemistry. Part III. Polyfluorinated azides from 1*H*- and 2*H*-pentafluoropropene and perfluorobut-2-yne, 2172.
Banthorpe, D. V., and **Baxendale,** D. Terpene biosynthesis. Part III. Biosynthesis of (+)- and (−)-camphor in *Artemisia*, *Salvia*, and *Chrysanthemum* species, 2694.
Banthorpe, D. V., **Mann,** J., and **Turnbull,** K. W. Terpene biosynthesis. Part II. Biosynthesis of thujane derivatives in *Thuja*, *Tanacetum*, and *Juniperus* species, 2689.
Barber, H. J., and **Henderson,** M. A. Benziodazoles: synthesis for bioactivity studies, 862.
Barili, P. L., **Berti,** G., **Macchia,** B., **Macchia,** F., and **Monti,** L. Stereochemistry and mechanism of pinacol-type rearrangements in the 1-phenyl-4-t-butylcyclohexane series, 1168.
Barker, G., and **Ellis,** G. P. Benzopyrones. Part I. 6-Amino- and 6-hydroxy-2-substituted chromones. Part II. 7-Hydroxy-4-oxochromen-2-carboxylic acid and some of its derivatives, 2230, 2609.
Barlow, M. G., **Haszeldine,** R. N., and **Hubbard,** R Valence-bond isomer chemistry. Part I. The valence-bond isomers of hexakis(trifluoromethyl)- and hexakis-(pentafluoroethyl)-benzenes, 1232.

Barnes, M. F., **Durley,** R. C., and **MacMillan,** J. Photo-oxygenation studies of some drivatives of *ent*-gibberellane, 1341.

Barnish, J. T., and **Gibson,** M. S. Transitional activation phenomena: synthesis of the 4*H*-benzo[*e*] [1,3,4]-thiadiazine ring, 854.

Barrett, G. C., **El-Abadelah,** M. M., and **Hargreaves,** M. K. Cleavage of 2-acetyl-2-phenylazopropionanilide and related compounds by boron trifluoride. New Japp–Klingemann reactions, 1986.

Barry, W. J. See **Alabaster,** R. J., 78.

Bartlett, E. H., **Eaborn,** C., and **Walton,** D. R. M. The reaction between nitrosyl chloride and aryltrimethylstannanes. A new method of preparing aromatic nitroso-compounds, 1717.

Bartlett, L., **Kirk,** D. N., **Klyne,** W., **Wallis,** S. R., **Erdtman,** H., and **Thorén,** S. Optical rotatory dispersion and circular dichroism. Part LXIX. Camphor derivatives; 'anti-octant' behaviour of hydroxy- and acetoxy-substituents, 2678.

Bartlett, L. See also **Chaudri,** B. A., 1329.

Barton, D. H. R., **Boar,** R. B., and **Widdowson,** D. A. Phenol oxidation and biosynthesis. Part XX. The mechanism of erysodienone formation *in vitro*. Part XXI. The biosynthesis of the *Erythrina* alkaloids, 1208, 1213.

Barton, D. H. R., **Feakins,** P. G., **Poyser,** J. P., and **Sammes,** P. G. A synthesis of the insect moulting hormone, ecdysone, and related compounds, 1584.

Barton, D. H. R., **Harrison,** D. M., **Moss,** G. P., and **Widdowson,** D. A. Investigations on the biosynthesis of steroids and terpenoids. Part II. Role of 24-methylene derivatives in the biosynthesis of steroids and terpenoids, 775.

Barton, D. H. R., **McGhie,** J. F., and **Batten,** P. L. On the oxidation of hydrazones by lead tetra-acetate, 1033.

Barton, D. H. R., **Sammes,** P. G., **Taylor,** M. V., and **Werstiuk,** E. Transformation of the steroidal sapogenin side chain. Part I. Reactions of 9(11)-dehydrohecogenin acetate with nitrous acid and with paraformaldehyde, 1977.

Barton, D. H. R. See also **Boar,** R. B., 678.

Bass, K. C., and **Nababsing,** P. Homolytic substitution of heteroaromatic compounds. Part II. Homolytic methylation of pyridine, quinoline, and isoquinoline in acidic and non-acidic media, 2169.

Bassindale, A. R., **Eaborn,** C., and **Walton,** D. R. M. Use of trimethylsilyl derivatives in simple syntheses of deuteriated anilines, phenols, and benzenethiols, 1577.

Batten, P. L. See **Barton,** D. H. R., 1033.

Baxendale, D. See **Banthorpe,** D. V., 2694.

Baxter, I., **Cameron,** D. W., and **Thoseby,** M. R. Preparation and some reactions of 6-arylsulphonimidobenzoxazol-2(3*H*)-ones, 850.

Baxter, I., and **Titman,** R. B. 2,3-Dihydro-1,4-benzoxazine-6,7-quinones and related compounds, 2078.

Baxter, I., and **Mensah,** I. A. Photolysis of t-butyl-substituted *p*-benzoquinone mono- and di-imine derivatives, 2604.

Bedford, G. R. See **Hill,** R., 2462.

Beech, W. F. Aroyl- and arylsulphonyl-sulphamic acids, 515.

Bender, C. O., **Bonnett,** R., and **Smith,** R. G. The chemistry of 1,3,4,7-tetramethylisoindole and a route to the tetrabenzporphyrin system, 1251.

Bennett, D. J., **Dean,** F. M., and **Price,** A. W. Spirans. Part VII. Three isomeric grisan derivatives from the oxidative cyclisation of benzylidenebis-2-naphthol, 1557.

Bennett, D. J., **Kirby,** G. W., and **Moss,** V. A. Deuteriation and tritiation of aryl aldehydes in the formyl group and the synthesis of (±)-3,4-dihydroxy[β-$^2H_2$]phenylalanine, 2049.

Bentley, R., **Stevens,** T. S., and **Thompson,** M. The alkaloids of *Gelsemium sempervirens*. Part III. Sempervirine, 791.

Bentley, R. K., and **Holliman,** F. G. Pigments of pseudomonas species. Part III. The synthesis of demethylaeruginosin B and aeruginosin B, 2447.

Beresford, P., **Lambert,** M. C., and **Ledwith,** A. Cation radicals: ring opening of a cyclobutane by electron transfer, 2508.

Berry, D. See **Banks,** R. E., 1017.

Berry, R. W. H., and **Burawoy,** A. 4,5-Diphenylpyridazine: preparation and ultraviolet spectrum, 1316.

Berti, G. See **Barili,** P. L., 1168.

Bhandarkar, J. G., and **Kirby,** G. W. An oxidation product of galanthamine and narwedine, 592.
Structure and biosynthesis of chlidanthine, 1224.

Bhattacharjee, A. K. See **Aspinall,** G. O., 361, 365.

Bhattacharyya, N. K. See **Datta,** S. K., 2058.

Biffin, M. E. C., **Brown,** D. J., and **Sugimoto,** T. Aza-analogues of pteridine. Part I. 1,2,4,6,8-Penta-azanaphthalene and some methyl, dihydro-, and 5-alkoxy-derivatives, 139.

Bingham, A. J., **Dyall,** L. K., **Norman,** R. O. C., and **Thomas,** C. B. Reactions of palladium(II) with organic compounds. Part I. Oxidative cyclisation of 3-methyl-3-phenyl-but-1-ene and 3,3,3-triphenylpropene, 1879.

Bingham, K. D., **Blaiklock,** T. M., **Coleman,** R. C. B., and **Meakins,** G. D. Hydroxy-steroids. Part XV. A quantitative study of the epoxidation of 3-substituted cholest-5-enes, 2330.

Binns, F., **Chapman,** R. F., **Robson,** N. C., **Swan,** G. A., and **Waggott,** A. Studies related to the chemistry of melanins. Part VIII. The pyrrolecarboxylic acids formed by oxidation or hydrolysis of melanins derived from 3,4-dihydroxyphenethylamine or (±)-3,4-dihydroxyphenylalanine, 1128.

Binns, F., **King,** J. A. G., **Mishra,** S. N., **Percival,** A., **Robson,** N. C., **Swan,** G. A., and **Waggott,** A. Studies related to the chemistry of melanins. Part XIII. Studies on the structure of dopamine-melanin, 2063.

Binns, F., **King,** J. A. G., **Percival,** A., **Robson,** N. C., and **Swan,** G. A. Studies related to the chemistry of melanins. Part IX. Syntheses of specifically deuteriated 3,4-dihydroxyphenethylamines and (±)-3,4-dihydroxyphenylalanines, 1134.

Binns, F., **Roberts,** S. M., and **Suschitzky,** H. Polyhalogenoaromatic compounds. Part XIII. The reduction of pentachloropyridine and derivatives with lithium aluminium hydride and other complex metal hydrides, 1375.

Birch, A. J., **Macdonald,** P. L., and **Powell,** V. H. Reactions of cyclohexadienes. Part VIII. Stereoselective and nonstereoselective syntheses of (±)-juvabione, 1469.

Birch, G., and **Richardson,** A. C. Chemical modification of trehalose. Part II. Synthesis of the *galacto*-analogue of trehalose, 749.

Birchall, J. M., **Haszeldine,** R. N., and **Kemp,** J. E. G. Polyfluoroarenes. Part X. Polyfluoroaromatic azo-compounds. Part XII. Some azoxy-compounds and benzotriazoles, 449, 1519.

Birchall, J. M., **Haszeldine,** R. N., and **Morley,** J. O. Polyfluoroarenes. Part XI. Reactions of tetrafluorophthalonitrile with nucleophilic reagents. Part XIV. Synthesis of halogenophthalocyanines, 456, 2667.

Birchall, J. M., **Haszeldine,** R. N., and **Speight,** J. G. Polyfluoroarenes. Part XIII. Further homolytic reactions of polyfluoroiodobenzenes, 2187.

Birks, L. E. See **Banks,** R. E., 201, 2539.

Bishop, D. C., and **Tucker,** M. J. Synthesis of some dibenzo[*a*,*h*]quinolizines, 2184.

Bishop, M. J., and **Fleming,** I. Synthesis of dimethyl bicyclo[3,2,2]nona-2,6,8-triene-6,7-dicarboxylate, 2524.

Bishop, R., and **Hamer,** N. K. 2-Hydroxycyclopentenone derivatives from photocyclisation of αβ-unsaturated 1,2-diketones: a suggested triplet biradical intermediate, 1193.

Photochemistry of some non-conjugated unsaturated 1,2-diketones, 1197.

Biswas, K. M., and **Jackson,** A. H. Diborane as a reducing agent. Part III. The reduction of oxygen heterocyclic carbonyl compounds and aromatic esters, and the catalytic action of boron trifluoride, 1667.

Black, A. L., and **Summers,** L. A. Radical cations from diquaternary salts of di-2-pyridyl ketone, 2394.

Black, R. M., and **Gill,** G. B. Adamantane chemistry. Part I. Some intramolecular ring expansion reactions of adamantan-2-one; the synthesis of 4-substituted homoadamantanes, 671.

Blackburn, E. V., **Loader,** C. E., and **Timmons,** C. J. Studies in photochemistry. Part VIII. The ultraviolet, proton magnetic resonance, and mass spectra, and photocyclisation of some styrylnaphthalenes to some benzo[*c*]-phenanthrenes and chrysenes, 163.

Blackburn, E. V., and **Timmons,** C. J. Studies in photochemistry. Part IX. Stilbene analogues which fail to undergo photocyclisation to phenanthrene analogues, 172.

Preparation and photochemistry of some tetrazaporphins, 175.

Blackman, A. J., and **Polya,** J. B. Triazoles. Part XI. Synthesis of 1,2,4-triazole-3-sulphonic acids by oxidation of 1,2,4-triazoline-3-thiones, 2403.

Blaiklock, T. M. See **Bingham,** K. D., 2330.

Blair, J. A., and **Gardner,** R. J. A simple unequivocal synthesis of 1,2-dialkylhydrazines, 1714.

An infrared spectroscopic method of distinguishing isomeric disubstituted hydrazines as salts, 2707.

Blake, K. W., and **Sammes,** P. G. Geometrical isomerism and tautomerism of 3-arylidene-6-methyl-piperazine-2,5-diones, 980.

Preparation and reactions of some substituted pyrazine di-*N*-oxides, 1070.

Blessington, B., **Mathieson,** D. W., and **Karim,** A. Cassminic acid, a minor constituent from the bark of *Erthrophleum guineense*, 1703.

Bloodworth, A. J. Organometallic oxides, alkoxides, and peroxides. Part III. Phenylmercury(II) alkoxides, 2051.

Bloomer, J. L., **Eder,** W. R., and **Hoffman,** W. F. Biosynthesis of (+)-protolichesterinic acid in *Cetraria islandica*, 1848.

Bloomfield, D. G., **Partridge,** M. W., and **Vipond,** H. J. Cyclic amidines. Part XXIII. Dibenzo[*b*,*h*][1]benzopyrano[2,3,4-*de*][1,6]naphthyridines and their molecular orientation in carcinogenesis, 2647.

Blossey, E. C. See **Rubin,** M. B., 57.

Boar, R. B., **Knight,** D. C., **McGhie,** J. F., and **Barton,** D. H. R. Conversion of α- and β-amyrin into ursolic and oleanolic acids respectively. A synthesis of oleanolic acid, 678.

Boar, R. B. See also **Barton,** D. H. R., 1208, 1213.

Bolton, R. G. See **Ackeson,** R. M., 1067.

Bonnett, R. See **Bender,** C. O., 1251.

Booth, H. See **Archer,** D. A., 2276.

Bose, A. K. See **Manhas,** M. S., 116.

Boul, A. D. See **Andrews,** A. T. de B., 1052.

Bourne, A. J., **Jarvie,** A. W. P., and **Holt,** A. Halogen–metal exchange reactions with 2-halogenoalkylsilicon compounds, 1740.

Bourne, E. J., **Johnson,** P. G., and **Percival,** E. The water-soluble polysaccharides of *Cladophora rupestris*. Part IV. Autohydrolysis, methylation of the partly desulphated material, and correlation with the results from Smith degradation, 1561.

Bowers, R. J., and **Brown,** A. G. Oxidation of methyl 2-hydroxy-3-methyl- and methyl 2-hydroxy-3-phenylindolizine-1-carboxylates, 1434.

Bowers, W. S. See **Findlay,** J. A., 2631.

Bowie, R. A., and **Musgrave,** O. C. Organoboron compounds. Part VII. Photochemical reactions of boron halides with aromatic hydrocarbons and aromatic ethers, 485.

Bowie, R. A., **Musgrave,** O. C., and **Goldschmid,** H. R. Organoboron compounds. Part X. The reaction of lithium with trialkyl borates, 2228.

Bowman, R. E., **Brunt,** K. D., **Harrison,** C. E., and **Williamson,** W. R. N. Trihalogenomethyl compounds of potential therapeutic interest. Part VIII. Synthesis of some epoxides, amides, alcohols, and acetylenic amines, 94.

Bowman, R. E., and **Williamson,** W. R. N. Trihalogenomethyl compounds of potential therapeutic interest. Part IX. Miscellaneous reactions, 101.

Boyd, D. R., and **Grundon,** M. F. Quinoline alkaloids. Part X. (+)-Platydesminium salt and other alkaloids from *Skimmia japonica* Thunb. The synthesis of edulinine, 556.

Boyd, G. V., and **Dando,** S. R. Synthesis of 1,3,4-oxadiazolium and 1,3,4-oxadiazolo[3,2-*a*]pyridinium salts, 1397.

Boyd, G. V., **Ellis,** A. W., and **Harms,** M. D. Heterocyclic analogues of cyclopentadienylidenecycloheptatriene derived from pyridine, 800.

Boyd, G. V., and **Harms,** M. D. Heterocyclic analogues of cyclopentadienylidenecycloheptatriene derived from 1,3,4-oxadiazole and 1,2,4-triazole, 807.

Boyd, G. V., and **Wright,** P. H. Anhydro-2-hydroxyoxazolo[3,2-*a*]pyridinium hydroxide, a mesoionic oxazolone, 1485.

Brady, W. T., and **Smith,** L. The reaction of dimethylketen with some acid halides, 2522.

Brans, R., and **Cremlyn,** R. J. W. *N*-Acetyl-*N*-trichloromethylsulphenylarenesulphonamides, 225.

Brennan, S., and **Finan,** P. A. Glycosides. Part IV. 3,4,6-Tri-*O*-acetyl-2-*O*-benzyl-α-glucopyranosyl bromide, 1742.

Brettle, R., **Parkin,** J. G., and **Seddon,** D. Anodic oxidation. Part IX. Electrolysis of ethyl sodiomethylacetoacetate, 1317.

Brettle, R., and **Seddon,** D. Anodic oxidation. Part VIII. Electrolysis of dimethyl sodiomalonate in hexamethylphosphoric triamide. Part X. Experiments with dimedone (5,5-dimethylcyclohexane-1,3-dione), 1153, 2175.

The oxidation of ethyl α-methylacetoacetate with lead dioxide, 1320.

Brewer, A. D. See **Mirza,** J., 437.

Brewer, J. P. N., **Eckhard,** I. F., **Heaney,** H., **Johnson,** M. G., **Marples,** B. A., and **Ward,** T. J. Aryne chemistry. Part XXVII. The photolysis of 1,2-di-iodotetrafluorobenzene in the presence of benzene, 2569.

Bridge, M. See **Banks,** R. E., 48, 2531, 2539.

Bridgeman, J. E., **Butchers,** C. E., **Jones,** Sir Ewart R. H., **Kasal,** A., **Meakins,** G. D., and **Woodgate,** P. D. Studies in the steroid group. Part LXXX. Preparation of 2- and 16-oxo-, and 3,16- and 2,16-dioxo-5α-androstane and 2-oxo-5α-cholestane, 244.

Bridgeman, J. E., **Cherry,** P. C., **Clegg,** A. S., **Evans,** J. M., **Jones,** Sir Ewart R. H., **Kasal,** A., **Kumar,** V., **Meakins,** G. D., **Morisawa,** Y., **Richards,** E. E., and **Woodgate,** P. D. Microbiological hydroxylation of steroids. Part I. Proton magnetic resonance spectra of ketones, alcohols, and acetates in the androstane, pregnane, and œstrane series, 250.

Brienne, M. J., **Heymes,** A., **Jacques,** J., **Snatzke,** G., **Klyne,** W., and **Wallis,** S. R. Circular dichroism and optical rotatory dispersion of some hexahydroindanone derivatives; methyl- and methylene-substituted steroid ketones, 423.

Briggs, L. H., and **Orgias,** E. F. Some cyclohexane- and androstane-substituted pyrimidines and pyrazoles, 1885.

Brimacombe, J. S., **Gent,** P. A., and **Westwood,** J. H. Nucleophilic displacement reactions in carbohydrates. Part XV. Displacements with 1,2:5,6-di-*O*-isopropylidene-3-*O*-*p*-tolylsulphonyl-β-L-talofuranose, 1632.

Brimacombe, J. S., **Hunedy,** F., and **Husain,** A. Nucleophilic displacement reactions in carbohydrates. Part XIV. The reaction of 2,3-*O*-isopropylidene-5,6-bis-*O*-methylsulphonyl-α-D-mannofuranose with sodium methoxide: a route to L-allose derivatives, 1273.

Brokenshire, J. L. See **Fahey,** J. L., 719.

Brooks, C. J. W., **Lindsay,** G., and **Overton,** K. H. A revised structure for nordrimenone, 203.

Brophy, G. C., **Sternhell,** S., **Brown,** N. M. D., **Brown,** I., **Armstrong,** K. J., and **Martin-Smith,** M. Benzo[*b*]-thiophen derivatives. Part XI. Nitration of 3-acetyl- and 3-formyl-benzo[*b*]thiophens, 933.

Brown, A. G. Versimide, a metabolite of *Aspergillus versicolor*, 2572.

Brown, A. G. See also **Bowers,** R. J., 1434.

Brown, A. P. See **Rubin,** M. B., 57.

Brown, C., **Murray,** M., and **Schmutzler,** R. Fluorodiphenylphosphine, 878.

Brown, D. J., and **Lee,** T.-C. Pyrimidine reactions. Part XX. Thermal rearrangement of 5-(*p*-substituted phenyl)-2(and 4)-methoxy-pyrimidines, 214.

Brown, D. J., and **Sugimoto,** T. Aza-analogues of pteridine. Part II. The novel use of silver oxide in transetherification of alkoxy-1,2,4,6,8-penta-azanaphthalenes, alkoxynitropyrimidines, and related systems, 2661.

Brown, D. J. See also **Biffin,** M. E. C., 139.

Brown, E. I. G., **Leaver,** D., and **McKinnon,** D. M. The dithiole series. Part IV. Syntheses of dithiolylidene ketones and 1,6,6aS(IV)-trithiapentalenes from dithiolylium salts and of analogous compounds from pyrylium and thiopyrylium salts, 1202.

Brown, I. See **Brophy,** G. C., 933.

Brown, J. C., and **Cross,** B. E. Inversion of ring D of gibberic acid, 71.

Brown, N. M. D. See **Brophy,** G. C., 933.

Brown, P. M., **Krishnamoorthy,** V., **Mathieson,** J. W., and **Thomson,** R. H. Naturally occurring quinones. Part XVII. Synthesis of lambertellin, 109.

Browne, E. J., **Nunn,** E. E., and **Polya,** J. B. 2-Oxazolin-4-ones and their conversion into 3-hydroxymethyl-1,2,4-triazoles, 1515.

Bruce, J. M., and **Creed,** D. Light-induced and related reactions of quinones. Part VI. Reactions of some *p*-quinones carrying formyl groups, 649.

Bruce, J. M., and **Dawes,** K. Light-induced and related reactions of quinones. Part V. Substituent effects in light-induced reactions between *p*-quinones and aldehydes, 645.

Brunswick, D. J., **Partridge,** M. W., and **Vipond,** H. J. Cyclic amidines. Part XXII. Novel isomerism of disubstituted tricycloquinazolines and molecular orientations in carcinogenesis, 2641.

Brunt, K. D. See **Bowman,** R. E., 94.

Buchanan, J. G. St. C., and **Halsall,** T. G. The conversion of turraeanthin and turraeanthin A into simple meliacins by a route involving an oxidative rearrangement of probable biogenetic importance, 2280.

Buckingham, J., and **Guthrie,** R. D. Arylazo-steroids. Part VI. Optical rotatory dispersion spectra of geometrical isomers of arylazoalkanes, 106.

Bull, J. R., and **Norton,** K. B. Steroidal analogues of unnatural configuration. Part I. 4,4,14α-Trimethyl-19-(10 → 9β)*abeo*-10α-pregn-5-enes from cucurbitacins, 1592.

Burawoy, A. See **Berry,** R. W. H., 1316.

Burdon, J., **Chivers,** G. E., and **Tatlow,** J. C. Highly fluorinated heterocycles. Part III. The preparation and reactions of some polyfluorofurans, 2146.

Burdon, J., and **Westwood,** W. T. Aromatic polyfluoro-compounds. Part XLIX. Nucleophilic replacement reactions of 2,3,4,5,6-pentafluorostyrene, 1271.

Burkinshaw, G. F., **Davis,** B. R., and **Woodgate,** P. D. The photochemistry of some 4-hydroxycyclohexa-2,5-dienones, 1607.

Butchers, C. E. See **Bridgeman,** J. E., 244.

Butler, R. See **Arotsky,** J., 1480.

Butler, R. N., **Scott,** F. L., and **Scott,** R. D. Sequential attack by a diketone on a polyhydrazine; the reaction of triaminoguanidine with acetylacetone, 2510.

Butsugan, Y. See **Matsuura,** T., 664.

Buu-Hoï, N. P., **Croisy,** A., **Jacquignon,** P., **Renson,** M., and **Ruwet,** A. Carcinogenic nitrogen compounds. Part LXVIII. A new glass of pseudoazulenes: [1]benzoselenino[4,3-*b*-]indoles, 1058.

Buu-Hoï, N. P., **Saint-Ruf,** G., and **Perche,** J.-C. Oxygen heterocycles. Part XVI. Oxo-derivatives of a new heterocyclic system: 2*H*-naphth[1,8-*bc*]oxepin, 1327.

Bycroft, B. W., **Hassanaili-Walji,** A., **Johnson,** A. W., and **King,** T. J. The structure and synthesis of barakol: a novel dioxaphenalene derivative from *Cassia siamea*, 1686.

Bycroft, B. W., **Hatton,** J. R., and **Roberts,** J. C. Studies in mycological chemistry. Part XXV. Experiments directed towards a synthesis of aflatoxin-G2: synthesis of the coumarino-lactone system, 281.

Byfield, D. See **Stuart,** K. L., 1228.
Byrne, E., **Cahill,** D. M., and **Shannon,** P. V. R. Some new products from the reaction of colupulone with persulphate, 1637.

C

Cadenas, R. A. See **Zanlungo,** A. B., 1908.
Cadogan, J. I. G., **Kulik,** S., **Thomson,** C., and **Todd,** M. J. Reduction of nitro- and nitroso-compounds by tervalent phosphorus reagents. Part VII. A new synthesis of phenothiazines involving a new molecular rearrangement, 2437.
Cadogan, J. I. G., **Marshall,** R., **Smith,** D. M., and **Todd,** M. J. Reduction of nitro- and nitroso-compounds by tervalent phosphorus reagents. Part VIII. Syntheses of benzimidazoles and anthranils, 2441.
Cahill, D. M. See **Byrne,** E., 1637.
Callaghan, P. D., and **Gibson,** M. S. Synthesis of *N*-α-chlorobenzylidene-*N'*-(2,4- and 4,2-halogenoiodophenyl)-hydrazines and their reaction with thioacetate ion, 2106.
Camaggi, G., and **Gozzo,** F. Synthesis and derivatives of tetrafluorocyclopropene, 178.
Cambie, R. C., and **Carlisle,** V. F. Aromatic steroids. Part IV. Chromium trioxide oxidation of some oestra-1,3,5(10),9(11)-tetraenes, 1706.
Cameron, D. W. See **Baxter,** I., 850.
Candy, C. F., **Jones,** R. A., and **Wright,** P. H. Pyrrole studies. Part XV. Vilsmeier–Haack formylation of 1-substituted pyrroles, 2563.
Candy, H. A., **Pakshong,** J. M., and **Pegel,** K. H. Pimarane diterpenes from *Cleistanthus schlechteri*, 2536.
Capon, B., and **Foster,** R. L. The preparation of chitin oligosaccharides, 1654.
Capozzi, G., **Melloni,** G., and **Modena,** G. Reactivity of vinyl sulphonic esters. Part I. Addition of *O*-sulphenyl arenesulphonates to acetylene derivatives. Part II. Cyclisation of arylthiovinyl sulphonates to benzo[*b*]-thiophen derivatives. Part III. Reactivity of arylthiovinyl sulphonates with nucleophiles, 2617, 2621, 2625.
Carlisle, V. F. See **Cambie,** R. C., 1706.
Carlon, F. E. See **Popper,** T. L., 1344, 1352.
Carpenter, J. M., and **Shaw,** G. Purines, pyrimidines, and imidazoles. Part XXXIII. Synthesis of 5-methylsulphonyluridine and its 5'-mono- and -pyrophosphates, 2016.
Carroll, F. I., **Miller,** H. W., and **Meck,** R. Thiosemicarbazone and amidinohydrazone derivatives of some 1,4-naphthoquinones, 1993.
Carruthers, W., and **Qureshi,** M. I. New derivatives of bicyclo[4,2,1]nonane, 2238.
Carson, M. S., **Cocker,** W., **Evans,** S. M., and **Shannon,** P. V. R. The chemistry of terpenes. Part XI. Volatile products of the photolysis of (+)-*cis*-caran-5-one, 1447.
Cashell, P. A. See **Scott,** F. L., 2674.
Casy, A. F. See **Iorio,** M. A., 135.
Chakrabarti, J. K., **Szinai,** S. S., and **Todd,** A. Chemistry of adamantane. Part III. The synthesis and reactions of 1,2-disubstituted adamantane derivatives, 1303.
Chakrabarti, P. M., and **Chapman,** N. B. Mechanism of oxidative ring closure of compounds of the buta-1,3-diene-1-thiol type with halogens to give thiophen derivatives, 914.
Chalkley, G. R., **Snodin,** D. J., **Stevens,** G., and **Whiting,** M. C. Synthesis of aryloxysulphoxonium salts, 682.
Chambers, C. See **Stuart,** K. L., 1228.
Chambers, R. D. See **Allison,** C. G., 1023.
Chan, W. R., **Taylor,** D. R., and **Yee,** T. Triterpenoids from *Entandrophragma cylindricum* Sprague. Part I. Structures of sapelins A and B, 311.
Chapman, A. C., **Davies,** A. G., **Harrison,** P. G., and **McFarlane,** W. Organotin chemistry. Part V. Structure of the dialkyltin methoxide halides in solution: an analogy with the Grignard reagent, 821.
Chapman, N. B., **Clarke,** K., and **Sharma,** K. S. Some substitution reactions of thieno[3,2-*f*]quinoline, 2334.
Chapman, N. B., **Hughes,** C. G., and **Scrowston,** R. M. Some polycyclic systems related to [1]benzothieno-[2,3-*c*]pyridine, 2269.
Thieno[2,3-*b*][1]benzothiophen and thieno[3,2-*b*][1]benzothiophen. Part I. Preparation, 2431.
Chapman, N. B. See also **Chakrabarti,** P. M., 914.
Chapman, P. H., **Houghton,** R. P., and **Williams,** C. S. Reaction of co-ordinated ligands. Part V. The mechanisms of the hydrolyses, ester-exchange reactions, deuteriations, and racemisation of the copper(II), zinc(II), magnesium(II), and palladium(II) complexes of *N*-(alkoxycarbonylalkyl)salicylideneimines, 1183.
Chapman, R. F., **Percival,** A., and **Swan,** G. A. Studies related to the chemistry of melanins. Part XII. Some spectroscopic experiments regarding intermediates in melanogenesis, 1664.
Chapman, R. F., and **Swan,** G. A. Studies related to the chemistry of melanins. Part VII. Attempts to synthesise hydroxylated bi-indolyls, biphenyls, and indoline-2-carboxylic acid as possible intermediates in the formation of melanins from 3,4-dihydroxyphenethylamine and 3,4-dihydroxyphenylalanine, 865.
Chapman, R. F. See also **Binns,** F., 1128.
Charubala. See **Kametani,** T., 624.
Chatfield, P. V. See **Baker,** J. A., 2478.
Chaudri, B. A., **Goodwin,** D. G., **Hudson,** H. R., **Bartlett,** L., and **Scopes,** P. M. Optical rotatory dispersion and circular dichroism. Part LXVI. 2-Halogenoalkanes, 1329.
Cheng, W. M. See **Banks,** R. E., 55.
Cherry, P. C. See **Bridgeman,** J. E., 250.
Chin, C., **Cutler,** M. C., **Jones,** Sir Ewart, R. H., **Lee,** J., **Safe,** S., and **Thaller,** V. Natural acetylenes. Part XXXI. C_{14}-Tetrahydropyranyl and other polyacetylenes from the compositae *Dahlia coccinea* Cav. var. *coccinea*, 314.
Chittenden, R. A., and **Cooper,** G. H. Aminobicyclo[2,2,1]-heptanes. Part II. Diastereoisomeric dimethylaminobornyl acetates, 49.
Chivers, G. E. See **Burdon,** J., 2146.
Choudhury, A. M., **Schofield,** K., and **Ward,** R. S. The acid-catalysed rearrangement of 2,3-dihydrobenzo[*b*]furan-2-spiro-1'-cyclohexa-2',5'-dien-4'-one and 3,4-dihydro-2*H*-benzo[*b*]pyran-2-spiro-1'-cyclohexa-2',5'-dien-4'-one, 2543.
Chow, Y. L., and **Tam,** J. N. S. Photoreaction of nitroso-compounds in solution. Part XIV. Reactions of amidoradicals, 1138.
Churchill, F. C. II. See **McKinnery,** R. M., 654.
Cinquini, M., **Colonna,** S., and **Montanari,** F. Neighbouring-group participation by sulphinyl-oxygen. Part III. Stereomutations at the sulphur atom in norbornene disulphoxides, 572.

Claisse, J. A., **Davies,** D. I., and **Parfitt,** L. T. Some free-radical addition reactions of pin-2-ene, pin-2(10)-ene, and thuj-4(10)-ene, 258.
Claret, P. A. See **Archer,** A. W., 1296.
Clark, B. A. J., **Parrick,** J., **West,** P. J., and **Kelly,** A. H. Diazaindenes (azaindoles). Part III. Reactions of Vilsmeier reagents leading to 3-formyl-1,6-diazaindene and -1,4-diazabenz[*f*]indene, 498.
Clark, G. R., and **Waters,** T. N. Crystal structure and absolute configuration of the diterpenoid, methyl 6α-bromo-12-methoxy-7-oxopodocarpate, 887.
Clark, J., **Gelling,** I., **Southon,** I. W., and **Morton,** M. S. Heterocyclic studies. Part XIII. Ready ring cleavage of some pyrimidine derivatives to give highly substituted ethylenes, 494.
Clarke, K., **Hughes,** C. G., **Humphries,** A. J., and **Scrowston,** R. M. Some derivatives of [1]benzothieno[2,3-*c*]pyridine and [1]benzothieno[3,2-*c*]pyridine, 1013.
Clarke, K. See also **Chapman,** N. B., 2334.
Clarke, T. G., **Hampson,** N. A., **Lee,** J. B., **Morley,** J. R., and **Scanlon,** B. Oxidations involving silver. Part VI. Oxidation of α-amino-acids and α-amino-esters with silver(II) picolinate and silver(II) oxide, 815.
Clayton, J. P., **Southgate,** R., **Ramsay,** B. G., and **Stoodley,** R. J. Studies related to penicillins. Part IV. The rearrangement of penicillanic acid derivatives to 1,4-thiazepines, 2089.
Clegg, A. S. See **Bridgeman,** J. E., 250.
Cleophax, J., **Gero,** S. D., **Hildesheim,** J., **Sepulchre,** A. M., **Guthrie,** R. D., and **Smith,** C. W. Synthesis of *N*-substituted methyl 2,3-dideoxy-2,3-epimino-β-D-lyxofuranosides, 1385.
Cliff, G. R., **Collington,** E. W., and **Jones,** G. Azonia-azulene salts. Part II. Further approaches to the synthesis of azepino[1,2-*a*]indolium salts, 1490.
Clinging, R., **Dean,** F. M., and **Houghton,** L. E. Steric effects in the *C*-alkylation and ring expansion of coumarins by diazomethane, 897.
Cochran, T. G. See **Eckroth,** D. R., 2660.
Cocker, W. See **Carson,** M. S., 1447.
Cohen, T. See **Pinkus,** J. L., 242.
Coleman, R. C. B. See **Bingham,** K. D., 2330.
Coll, J. C. See **Shoppee.** C. W., 1121, 1124, 1893.
Collier, J. R., **Dirania,** M. K. M., and **Hill,** J. Photolysis of α-aryloxy-ketones, 155.
Collington, E. W. See **Cliff,** G. R., 1490.
Collins, I., and **Suschitzky,** H. Polyhalogeno-aromatic compounds. Part XIV. Nucleophilic substitution and peroxy-acid oxidation of pentabromopyridine and some of its *NN*-dialkylamino- and bis-(*NN*-dialkylamino)-derivatives, 1523.
Colonna, F. P., **Fatutta,** S., **Risaliti,** A., and **Russo,** C. Vinylamines. Part IX. Reaction of cyclohexanone enamines with αβ-unsaturated ketones, 2377.
Colonna, S. See **Cinquini,** M., 572.
Connolly, J. P., **Muircheartaigh,** S. F. Ó., and **Thomson** J. B. Steroids. Part XIII. Pyrolysis of maleic anhydride and maleic ester adducts of 9,11-epoxy-5,7-dienes, 508.
Coombes, G. E. A., **Harvey,** D. J., and **Reid,** S. T. Synthesis of 3-amino-1,2,3,4-tetrahydro-6-hydroxycarbazole, an analogue of 5-hydroxytryptamine, 325.
Coombs, M. M., **Jaitly,** S. B., and **Crawley,** F. E. H. Potentially carcinogenic cyclopenta[*a*]phenanthrenes. Part IV. Synthesis of 17-ketones by the Stobbe condensation, 1266.
Cooper, G. H. See **Chittenden,** R. A., 49.
Cooper, J., **Ewing,** D. F., **Scrowston,** R. M., and **Westwood,** R. Substitution reactions of benzo[*b*]thiophen derivatives. Part I. Bromination and nitration of 2,3-dibromobenzo[*b*]thiophen and its 5-methyl derivative, 1949.
Cooper, R. D. G., **Demarco,** P. V., **Murphy,** C. F., and **Spangle,** L. A. Chemistry of cephalosporin antibiotics. Part XVI. Configurational and conformational analysis of deacetoxy-Δ^2- and -Δ^3-cephalosporins and their corresponding sulphoxide isomers by nuclear magnetic resonance, 340.
Coppola, J. C. See **Allen,** D. W., 810.
Corbett, J. F. The chemistry of hydroxy-quinones. Part V. The oxidation of 5-alkyl- and 2,5-dialkyl-3-hydroxybenzoquinones in the presence of alkali. Part VI. Formation of 2-hydroxysemiquinones during the autoxidation of benzene-1,2,4-triols in alkaline solution, 1912, 2101.
Corfield, J. R., **Harger,** M. J. P., **Shutt,** J. R., and **Trippett,** S. Further ring openings and ring expansions of phosphetans, 1855.
Cornforth, J. W., and **Green,** D. T. Iodohydrins and epoxides from olefins, 846.
Cornforth, R. H. Stereochemistry of reduction of epoxides by borohydride anion, 928.
Cort, L. A. See **Ardrey,** R. E., 2457.
Cottam, J. See **Cotterill,** W. D., 1006.
Cotterill, W. D., **Cottam,** J., and **Livingstone,** R. The stereochemistry and reactions of some 3,4-disubstituted chromans, 1006.
Cotterill, W. D., **Livingstone,** R., and **Walshaw,** M. V. 1,3- and 3,3-Bis(methoxyphenyl)naphtho[2,1-*b*]pyrans, 1758.
Cotterrell, G. P., **Halsall,** T. G., and **Wriglesworth,** M. J. The chemistry of triterpenes and related compounds. Part XLVII. Clarification of the nature of the tetracyclic triterpene acids of elemi resin, 739.
A chemical model for a possible oxidative rearrangement in the biosynthesis of triterpenes: the rearrangement of 7α,8α- and 8,9-epoxytirucallanes, 1503.
Coucourakis, E. D., and **Gordon-Gray,** C. G. The *Senecio* alkaloids. Suggested structures for isoline and bisline, two new alkaloids from *Senecio othonniformis* Fourcade, 2312.
Coutts, I. G. C., **Goldschmid,** H. R., and **Musgrave,** O. C. Organoboron compounds. Part VIII. Aliphatic and aromatic diboronic acids, 488.
Coutts, I. G. C., and **Musgrave,** O. C. Organoboron compounds. Part IX. Diborinic acids and their derivatives, 2225.
Cox, D. A., and **Cross,** P. E. Some reactions of 2-amino-1,4-dihydro-1-methylquinazoline with electrophilic reagents, 2134.
Cragg, G. M. L. Cycloaddition of dichloroketen to some steroid olefins, 1829.
Crawford, M., and **Supanekar,** V. R. Synthesis of benzo[*b*]naphtho[2,1-*j*]fluoranthene. Benzo[*a*]naphtho[2,3-*j*]-fluoranthene and other related benzo[*j*]fluoranthene derivatives, 1832.
Crawley, F. E. H. See **Coombs,** M. M., 1266.
Crawley, G. C. See **Jones,** D. F., 1725.
Creasey, S. E. See **Guthrie,** R. D., 1961.
Creed, D. See **Bruce,** J. M., 649.
Cremlyn, R. J. W., and **Olsson,** N. A. Some steroid pyrophosphates, 1889.

Cremlyn, R. J. W., and **Turner,** J. L. Sulphonohydrazides and related compounds. Part XII. Some arylsulphonyl derivatives of carbonohydrazide and related hydrazides, 2629.

Cremlyn, R. J. W. See also **Brans,** R., 225.

Crispin, D. J., **Vanstone,** A. E., and **Whitehurst,** J. S. Experiments in steroid synthesis: oestrone, 10.

Crocker, H. P., and **Walser,** R. Aromatic nuclear chlorination by copper(II) chloride, 1982.

Crofts, P. C., and **Parker,** D. M. Tertiary butyl phosphorus compounds, 332.

t-Butyl phosphorus compounds: a correction, 2342.

Tertiary-pentyl phosphorus compounds, 2529.

Croisy, A. See **Buu-Hoï,** N. P., 1058.

Crombie, L., **Doherty,** C. F., and **Pattenden,** G. Syntheses of ^{14}C-labelled (+)-*trans*-chrysanthemum mono- and dicarboxylic acids, and of related compounds, 1076.

Cross, B. E., **Myers,** P. L., and **Webster,** G. R. B. New metabolites, of *Gibberella fujikuroi*. Part XIV. *O*-Demethylanhydrofusarubin, 930.

Cross, B. E., and **Webster,** G. R. B. New metabolites of *Gibberella fujikuroi*. Part XV. *N*-Jasmonoyl- and *N*-dihydrojasmonoyl-isoleucine, 1839.

Cross, B. E. See also **Brown,** J. C., 71.

Cross, P. E. See **Cox,** D. A., 2134.

Crout, D. H. G. See **Robins,** D. J., 1334.

Crowe, J. E., **Lynch,** M. F., and **Town,** W. G. Analysis of structural characteristics of chemical compounds in a large computer-based file. Part I. Non-cyclic fragments, 990.

Cubbon, R. C. P., and **Hewlett,** C. Organic peroxides containing functional groups. Part IV. Preparation and properties of t-butyl peroxy-esters of cyclohexyl- and phenyl-phosphonic acids, 501.

Currie, A. C., **Dinwoodie,** A. H., **Fort,** G., **Gibson,** J. A., **Grigor,** J., **Parker,** J. B., and **Peters,** J. Difluorimide chemistry. Part I. Reactions of difluoroamino-alcohols, 1104.

Cutler, M. C. See **Chin,** C., 314.

D

Dallas, G., **Lown,** J. W., and **Moser,** J. P. The reaction of 2-arenoylaziridines with aldehydes to form oxazolidines, 2383.

Dando, S. R. See **Boyd,** G. V., 1397.

Danilewicz, J. C. Configuration of α-hydroxyiminoketones, 1049.

Darby, A. C. See **Arotsky,** J., 1480.

Datta, S. K., **Grundmann,** C., and **Bhattacharyya,** N. K. An abnormal Schmidt reaction: 4,5-dihydro-1*H*-1-benzazepin-2(3*H*)-one from γ-phenylbutyric acid, 2058.

Davies, A. G., and **Harrison,** P. G. Organotin chemistry. Part VIII. Functionally substituted distannathianes and tristannathianes, 2035.

Davies, A. G., **Harrison,** P. G., and **Palan,** P. R. Organotin chemistry. Part VII. Functionally substituted distannoxanes and oligostannoxanes, 2030.

Davies, A. G., and **Kennedy,** J. D. Organometallic reactions. Part XVII. Some exchange and addition reactions of aminodimethyltin compounds. Part XVIII. The reactions of *N*-sulphinyltoluene-*p*-sulphonamide and of *N*-(2,2,2-trichloroethylidene)toluene-*p*-sulphonamide with some tributyltin–oxygen and –nitrogen compounds, 759, 1570.

Davies, A. G. See also **Chapman,** A. C., 821.

Davies, D. I., **Hey,** D. H., and **Summers,** B. Homolytic aromatic substitution. Part XXXIV. Major products from the reaction of benzoyl peroxide with *p*-disubstituted benzenes, 2653.

Davies, D. I., and **Parrott,** M. J. Free-radical reactions of halogenated bridged polycyclic compounds. Part X. Addition of bromine and chlorine to hexachloronorbornadiene, 659.

Davies, D. I. See also **Claisse,** J. A., 258.

Davies, H. J., and **Main,** B. G. Some novel heterocyclic systems related to benzocycloheptene, 327.

Davies, J. H. See **Kirby,** P., 2250.

Davies, L. S., and **Jones,** G. Quinolizines. Part XIII. Rearrangement of quinolizinium-1-diazonium salts into *v*-triazolo[1,5-*a*]pyridines, 688.

Davis, B. R. See **Burkinshaw,** G. F., 1607.

Davoll, J., and **Johnson,** A. M. Quinazoline analogue of folic acid, 997.

Dawes, K. See **Bruce,** J. M., 645.

Dawkins, A. W., and **Grove,** J. F. Phytotoxic compounds produced by *Fusarium equiseti*. Part IV. Fission of trichothecan-3α,4β-diols by manganese dioxide, 369.

Dean, F. M., and **Houghton,** L. E. Formation of xanthen and fluorene derivatives by competitive 1,4- and 1,3-cycloadditions of quinonylmethyl anions to quinones, 722.

Dean, F. M. See also **Bennett,** D. J., 1557, and **Clinging,** R., 897.

Deeks, R. H. L. See **Askam,** V., 2245.

Deferrari, J. O. See **Zanlungo,** A. B., 1908.

Della Casa, C. See **Andreani,** F., 1157, and **Andrisano,** R., 1866.

De Luca, G., **Martelli,** G., **Spagnolo,** P., and **Tiecco,** M. Photochemical cyclisation of some iodophenyl- and iodothienyl-(thienyl) ethylenes, 2504.

Demarco, P. V. See **Cooper,** R. D. G., 340.

De Sio, F. See **Adembri,** G., 1536.

Deulofeu, V. See **Margni,** A. L., 2578.

Dewan, C. K. See **Singh,** A., 1114.

Dewhurst, F., and **Shah,** P. K. J. The nuclear halogenation of fluorene, fluorenone, acenaphthene, and acenaphthenequinone by *N*-bromosuccinimide and *N*-chlorosuccinimide, 1737.

Dickinson, R. P., and **Iddon,** B. Condensed thiophen ring systems. Part III. A new synthesis of benzo[*b*]thiophen-2(3*H*)- and -3(2*H*)-ones and some reactions of benzo[*b*]thiophen-2(3*H*)-one with dimethyl sulphate in the presence of base. Part IV. Synthesis, reactions, and stability of 2-phenyl-3-benzo[*b*]thienyl-lithium and related compounds, 1926, 2592.

Diggle, J. M., **Halliday,** M. D., **Kasal,** A., **Meakins,** G. D., and **Saltmarsh,** M. S. Hydroxy-steroids. Part XIV. The acid-catalysed ring opening of 5,6-epoxides in a largely non-aqueous medium, 2325.

Dimmock, J. R. See **Kingston,** D. G. I., 2574.

Diner, U. E. Reactions of iodonium nitrate with some alcohols, 676.

Dingwall, J. G., **Reid,** D. H., and **Symon,** J. D. Studies of heterocyclic compounds. Part VIII. Direct conversion of 4*H*-thiopyran-4-thiones into 6a-thiathiophthens and 3-acylmethylene-3*H*-1,2-dithioles, 2412.

Di Nunno, L., Florio, S., and Todesco, P. E. Oxidation of substituted anilines to nitroso-compounds, 1433.
Dinwoodie, A. H., Fort, G., and Parker, J. B. Difluorimide chemistry. Part III. Replacement reactions, 1108.
Dinwoodie, A. H., Gibson, J. A., and Parker, J. B. Difluorimide chemistry. Part II. Tris[(difluoroamino)-methyl]amine, 1106.
Dinwoodie, A. H. See also **Currie, A. C.**, 1104.
Dirania, M. K. M. See **Collier, J. R.**, 155.
Djerassi, C. See **Roller, P.**, 1089.
Doherty, C. F. See **Crombie, L.**, 1076.
Donnelly, J. A., and Murphy, J. J. The Fries rearrangement of *ortho*-halogenophenyl acetates, 2596.
Donnelly, W. J. G., and Shannon, P. V. R. *cis*- and *trans*-Tetrahydroisohumulones, 524.
Downing, D. F. See **Baker, W.**, 1219.
Duck, E. W., Locke, J. M., and Wallis, S. R. Addition of dichlorocarbene to some acyclic trienes, 2000.
Dunne, K., and McQuillin, F. J. Complexes of terpenes with transition metals. Part I. The reactions of *cis*- and *trans*-ocimene and of myrcene with palladium(II). Part II. Reactions of linayl and nerolidyl acetates, limonene, and the pinenes with disodium tetrachloropalladate(II). Part III. Dimerisation by means of tetrakis(triphenylphosphine)palladium, 2196, 2200, 2203.
du Preez, I. C., and Roux, D. G. Novel flavan-3,4-diols from *Acacia cultriformis*, 1800.
Durley, R. C. See **Barnes, M. F.**, 1341.
Dust, L. A., and Gill, E. W. Nitrate esters as intermediates in the oxidation of toluenes by ammonium cerium(IV) nitrate, 1630.
Dyall, L. K. See **Bingham, A. J.**, 1879.
Dyke, S. F. See **Sainsbury, M.**, 1797.

E

Eaborn, C. See **Bartlett, E. H.**, 1717, and **Bassindale, A. R.**, 1577.
Earley, R. A., and Gallagher, M. J. Synthesis of some nitrogen–arsenic heretocycles: 5,10-dihydro-5,10-*o*-benzenophenarsazine (azarsatriptycene), 10,11-dihydro-5-phenyl-5*H*-dibenzo[*b*,*f*][1,4]azarsepine, and 2,3-dihydro-1,2-diphenyl-1*H*-benz[*c*]azarsole, 158.
East, D. S. R., McMurry, T. B. H., and Mollan, R. C. The chemistry of santonene. Part IV. N.m.r. studies of the autoxidation products of santonene, 2008.
Eatough, J. J., Fuller, L. S., Good, R. H., and Smalley, R. K. Synthesis of polynuclear heterocycles. Part II. Cyclisations of 2- and 4-substituted 3-amino- and 3-nitropyridines, 1874.
Eckhard, I. F., Heaney, H., and Marples, B. A. Steroids and arynes. Part III. Reactions of arynes with ring A aromatic steroids and steroidal 1(10),9(11)-dienes, 2493.
Eckhard, I. F. See also **Brewer, J. P. N.**, 2569.
Eckroth, D. R., and Cochran, T. G. Mechanism of the conversion of 2-nitrobenzyl systems into 2,1-benzisoxazoles, 2660.
Eder, W. R. See **Bloomer, J. L.**, 1848.
Edmonds, A. C. F. See **Jones, D. N.**, 833.
Edmundson, R. S., and Mitchell, E. W. Cyclic organophosphorus compounds. Part XI. Stereoisomeric aralkyl phosphonates of the 1,3,2-dioxaphosphorinan series, 752.
Edmundson, R. S., and Moran, T. A. Alkylation of phosphoramidate and phosphinic amide anions, 1009.
El-Abadelah, M. M. See **Barrett, G. C.**, 1986.
Elad, D., and Friedman, G. Light-induced reactions of formamide with acetylenes, 893.
Elix, J. A. See **Sargeant, M. V.**, 307.
El Khadem, H., Shaban, M. A. E., and Nassr, M. A. M. Oxidation of phenylglyoxal dihydrazones to phenyl-1,2,3-triazoles, 2167.
El Khadem, H. See also **Mester, L.**, 2567.
El-Kholy, I. E-S., Rafla, F. K., and Mishrikey, M. M. Pyrone series. Part XI. Reactivity of 4,6-diaryl-2-pyrones and cyclopropane derivatives obtained from 2-pyrazolines, 1578.
Elliott, D. F. See **Abramson, F. B.**, 1042.
Ellis, A. W. See **Boyd, G. V.**, 800.
Ellis, G. P. See **Barker, G.**, 2230, 2609.
Elmaleh, D., Patai, S., and Rappaport, Z. Nuclear magnetic resonance and mass spectra of benzoselenopheno-[2,3-*b*]benzoselenophens, 939.
El-Neweihy, M. F. See **Baddar, F. G.**, 620.
El Shafei, Z. M., and Guthrie, R. D. Nitrogen-containing carbohydrate derivatives. Part XXIII. Some ring-opening reactions of methyl 2,3-*N*-aroylepimino-4,6-*O*-benzylidene-2,3-dideoxy-α-D-mannopyranosides, 843.
Engel, R. R., and Liotta, D. Thermal decomposition of phosphorothioates, 523.
Erdtman, H. See **Bartlett, L.**, 2678.
Evans, J. M. See **Bridgeman, J. E.**, 250.
Evans, R., Hanson, J. R., and White, A. F. Studies in terpenoid biosynthesis. Part VI. The stereochemistry of some stages in tetracyclic diterpene biosynthesis, 2601.
Evans, S. M. See **Carson, M. S.**, 1447.
Ewing, D. F. See **Cooper, J.**, 1949.

F

Fahey, J. L., Foster, P. A., Neilson, D. G., Watson, K. M., Brokenshire, J. L., and Peters, D. A. V. Preparation of *meso*-, (±)-, and optically active forms of 3,6-bis-(1-hydroxy-1-phenylpropyl)- and 3,6-bis-(1-hydroxy-1-phenylethyl)-1,2,4,5-tetrazines *via* a new synthesis of 1,2-dihydro-1,2,4,5-tetrazines from amidines, 719.
Farrell, P. G., and Wojtowski, R. K. A study of some reactions of the intermediate isolated from the *NN*-dimethylaniline–tetracyanoethylene reaction, 1390.
The formation of malononitrile derivatives in the reaction of tetracyanoethylene with *NN*-dialkylanilines, 1394.
Fatutta, S. See **Colonna, F. P.**, 2377.
Feakins, P. G. See **Barton, D. H. R.**, 1584.
Feast, W. J., Musgrave, W. K. R., and Reeves, N. Fluorination of dichloromaleic anyhdride with sulphur tetrafluoride, 2429.
Feeley, T. M., and Hargreaves, M. K. Circular dichroism studies. The pulegone oxides, 1745.
Feeney, J., Newman, G. A., and Pauwels, P. J. S. A study of pyrazolin-5-one tautomerism. Part IV. Natural abundance carbon-13 nuclear magnetic resonance spectra, 1842.
Fenwick, R. G. See **Ballantine, J. A.**, 2264.
Feré, A. See **Ferruti, P.**, 2512.
Ferruti, P., Feré, A., and Zetta, L. Aminoacetamides by treatment of 1,1,2,2-tetra-aminoethanes with water, 2512.
Field, D. S. See **Banks, R. E.**, 1280.

Fields, R., **Haszeldine,** R. N., and **Hubbard,** A. F. Organosilicon chemistry. Part VI. The photochemical reaction of bis(trimethylsilyl)mercury with hexafluorobenzene and with trimethyl(pentafluorophenyl)silane, 2193.

Fields, R., **Haszeldine,** R. N., and **Kirman,** J. Organophosphorus chemistry. Part IX. Reaction of dimethyl- and bis(trifluoromethyl)-phosphines with olefins, 197.

Fields, R., **Haszeldine,** R. N., and **Wood,** N. F. Organophosphorus chemistry. Part X. Reaction of dimethyl- and bis(trifluoromethyl)-phosphines with trifluoroethylene. Part XI. Reactions of dimethyl- and bis(trifluoromethyl)-phosphine with olefins, and photochemical reaction of ethyl(bistrifluoromethyl)phosphine with ethylene, 744, 1370.

Filipescu, N., and **Pavlik,** J. W. Thermally induced reactions of 10-diazoanthrone with alkenes, 1851.

Finan, P. A. See **Brennan,** S., 1742.

Findlay, J. A., **MacKay,** W. D., and **Bowers,** W. S. Convenient syntheses of two insect juvenile hormones and their isomers, 2631.

Firrell, N. F., and **Hickmott,** P. W. Enamine chemistry. Part VII. Synthesis and structure of dienamines of 3-alkyl-5,5-dimethylcyclohex-2-enones. Factors affecting the formation and relative stability of exo- and endocyclic diene systems, 716.

Firrell, N. F., **Hickmott,** P. W., and **Hopkins,** B. J. Enamine chemistry. Part VIII. Reaction of acryloyl chloride with dienamines, 1477.

Fitton, A. O., and **Hatton,** B. T. Pharmacologically active 4-oxo-4*H*-chromen-2-carboxylic acids. Part II. The synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused imidazole or oxazole ring, 2518.

Fitton, A. O., **Hatton,** B. T., **Ward,** M. P., and **Lewis,** R. Pharmacologically active 4-oxo-4*H*-chromen-2-carboxylic acids (2-carboxychromones). Part I. The synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused thiazole ring, 1553.

Fleming, I., and **Philippides,** D. Equilibrium between 4-acetoxypyridine and *N*-acetyl-4-pyridone; a correction of the literature, 2426.

Fleming, I. See also **Bishop,** M. J., 2524.

Fletcher, P., and **Marlow,** W. Synthesis of benzophenones: anomalous Friedel–Crafts reactions, 937.

Florio, S. See **Di Nunno,** L., 1433.

Flowerday, P., and **Perkins,** M. J. *peri*-Naphthotriazines and related compounds. Part III. Some photochemical reactions: synthesis of 1-methylacenaphtho[5,6-*bc*]pyridine, 298.

Flowerday, P., **Perkins,** M. J., and **Arthur,** A. R. J. *peri*-Naphthotriazines and related compounds. Part II. Some acenaphthylene derivatives; their preparation and properties, 290.

Floyd, A. J. See **Baker,** W., 1219.

Forrester, A. R., and **Hepburn,** S. P. Nitroxide radicals. Part VIII. Stability of *ortho*-alkyl-substituted phenyl t-butyl nitroxides, 1277.

Forrester, A. R., **Ogilvy,** M. M., and **Thompson,** R. H. Mode of action of carcinogenic amines. Part I. Oxidation of *N*-arylhydroxamic acids, 1081.

Fort, G. See **Currie,** A. C., 1104, and **Dinwoodie,** A. H., 1108.

Foster, P. A. See **Fahey,** J. L., 719.

Foster, R. L. See **Capon,** B., 1654.

Fouad, N. See **Tadros,** W., 1923.

Francis, D. J. See **Ballantine,** J. A., 1175.

Friedman, G. See **Elad,** D., 893.

Fujihara, M. See **Kametani,** T., 922, 2209.

Fujita, E., **Fujita,** T., and **Katayama,** H. Terpenoids. Part XVI. Chemical conversion of oridonin into isodocarpin, 1681.

Fujita, E., **Fujita,** T., **Katayama,** H., **Shibuya,** M., and **Shingu,** T. Terpenoids. Part XV. Structure and absolute configuration of oridonin isolated from *Isodon japonicus* and *Isodon trichocarpus*, 1674.

Fujita, T. See **Fujita,** E., 1674, 1681.

Fukumoto, K. See **Kametani,** T., 380, 382, 624, 922, 2209, 2213.

Fuller, L. S. See **Eatough,** J. J., 1874.

Funke, E., **Tozyo,** T., **Ishii,** H., and **Takeda,** K. Microbial transformation of sesquiterpenoids. Part II. Hydroxylation of liguloxide with *Mucor parasiticus* Bain, 2548.

G

Gagan, J. M. F., **Lane,** A. G., and **Lloyd,** D. The stereochemistry of β-chlorovinyl-aldehydes, 2484.

Gagan, J. M. F., and **Lloyd,** D. Preparation of quinolines from α-methylene-ketones, 2488.

Gallagher, M. J. See **Earley,** R. A., 158.

Gardini, G. P., and **Minisci,** F. Nucleophilic character of acyl radicals. Homolytic acylation of quinoxaline, 929.

Gardner, D. V., **McOmie,** J. F. W., and **Prabhu,** T. P. Biphenylenes. Part XXVII. Synthesis of compounds derived from 2-acetylbiphenylene, 2500.

Gardner, R. J. See **Blair,** J. A., 1714, 2707.

Garg, H. G., and **Prakash,** C. Bromination of copper chelates of monoarylhydrazones of triketones, 1056.

Garg, H. G., and **Singh,** P. P. Preparation and reactions of ethyl 4-bromo-2,3-dioxobutyrate 2-arylhydrazones and 4-bromo-2,3-dioxo-1-phenylbutanal 2-arylhydrazones, 656.

Garner, G. V. See **Garner,** R., 825.

Garner, R., **Garner,** G. V., and **Suschitzky,** H. Heterocyclic syntheses. Part XXIII. Synthesis and reactions of 2,3-dihydrobenzimidazoles, 825.

Garratt, P. J., **Vollhardt,** K. P. C., and **Mitchell,** R. H. Wittig reactions of 1,2-dihydro-1,2-bis(triphenylphosphoranylidene)benzocyclobutene and benzocyclobutene-1,2-quinone. The synthesis of dibenzo[*a*,*c*]benzo[3,4]-cyclobuta[1,2-*f*]cyclo-octane, 2137

Gašpert, B. See **Škarič,** V., 2444.

Geevers, J., **Hackmann,** J. T., and **Trompen,** W. P. Addition of chlorine to the cyanogen bond. Chlorothio-(dichloroformimido)cyanamide, 875.

Gelling, I. See **Clark,** J., 494.

Gent, P. A., and **Gigg,** R. A novel aromatisation reaction of derivatives of 1,2-*O*-isopropylidene-*myo*-inositol, 2253.

Gent, P. A. See also **Brimacombe,** J. S., 1632.

George, C., **Gill,** E. W., and **Hudson,** J. A. The rearrangement of *N*-(2-bromoallyl)-arylamines to 2-methylindoles, 74.

Gero, S. D., **Hildesheim,** J., **Walczak,** E., **Guthrie,** R. D., and **Smith,** C. W. The synthesis of methyl β-D-lyxofuranoside derivatives bearing a fused oxazoline ring, 1402.

Gero, S. D. See also **Cleophax,** J., 1385.

Giacopello, D. See **Margni,** A. L., 2578.

Giam, C. S. See **Abramovitch,** R. A., 128.

Gibson, J. A. See **Currie,** A. C., 1104, and **Dinwoodie,** A. H., 1106.

Gibson, M. S., **Prenton,** G. W., and **Walthew,** J. M. An aryne route to laureline, and related topics, 2234.
Gibson, M. S. See also **Barnish,** I. T., 854, and **Callaghan,** P. D., 2106.
Gigg, R. See **Gent,** P. A., 2253.
Gilbert, B. See **Baker,** W., 1219.
Gilchrist, T. L. See **Anderson,** D. J., 576.
Gill, E. W. See **Dust,** L. A., 1630, and **George,** C., 74.
Gill, G. B. See **Black,** R. M., 671.
Ginde, B. S., **Hosangadi,** B. D., **Kudav,** N. A., **Nayak,** K. V., and **Kulkarni,** A. B. Chemical investigations on *Cassia occidentalis* Linn. Part I. Isolation and structure of cassiollin, a new xanthone, 1285.
Gindy, M., **Baghos,** V. B., and **Shaban,** A. M. Benzo[*c*]-fluorenones. Part III. The conversion of 4,4-disubstituted 3-alkoxycarbonylbut-3-enoic acids into benzo[*c*]-fluorenone derivatives, 1905.
Gindy, M. See also **Tadros,** W., 1923.
Glue, S. See **Kay,** I. T., 445.
Gnoj, O. See **Popper,** T. L., 1344, 1349, 1352.
Goldschmid, H. R. See **Bowie,** R. A., 2228, and **Coutts,** I. G. C., 488.
Good, R. H., and **Jones,** G. The synthesis of oxazolo-[3,2-*a*]pyridinium salts, 1938.
Good, R. H. See also **Eatough,** J. J., 1874.
Goodwin, D. G. See **Chaudri,** B. A., 1329.
Gordon-Gray, C. G. See **Coucourakis,** E. D., 2312.
Gore, P. H., and **Hoskins,** J. A. Friedel–Crafts acylations of aromatic hydrocarbons. Part VIII. Mono- and di-acylation of mesitylene, 517.
Gorringe, A. M., **Lloyd,** D., and **Marshall,** D. R. Diazepines. Part XII. 6-Nitro- and 6-amino-2,3-dihydro-1*H*-1,4-diazepinium salts, 617.
Gourley, R. N., **Brimshaw,** J., and **Millar,** P. G. Electrochemical reactions. Part VIII. Asymmetric induction during the reduction of coumarins modified by the presence of tertiary amines, 2318.
Gozzo, F. See **Camaggi,** G., 178.
Gray, E. A., **Hulley,** R. M., and **Snell,** B. K. Pyrimidines. Part III. Synthesis of some 5-alkylthiopyrimidines, 986.
Gray, G. A., **Jackson,** W. R., and **Rooney,** J. J. Rearrangements in the formation of some π-allylpalladium compounds, 1788.
Graysham, R. See **Jones,** D. N., 2027, 2421.
Green, D. T. See **Cornforth,** J. W., 846.
Green, N. M., **Mose,** W. P., and **Scopes,** P. M. Optical rotatory dispersion and circular dichroism. Part LXVII. Biotin and related compounds, 1330.
Greenhill, J. V. Reaction of t-butylamine with cyclohexane-1,3-dione, 1002.
A series of amino-alcohols related to benzhexol (1-cyclohexyl-1-phenyl-3-piperidinopropan-1-ol), 1298.
Greenhill, J. V., and **Mehta,** M. D. Mannich reactions in high-boiling solvents, 1549.
Gregory, R., **Haszeldine,** R. N., and **Tipping,** A. E. Addition of free radicals to unsaturated systems. Part XVIII. The direction of radical addition to 1,3,3,3-tetrafluoropropene, 1750.
Griffiths, N. D. See **Ames,** D. E., 2672.
Grigg, R., and **Jackson,** J. L. Elimination of nitriles in retro-diene reactions, 552.
Grigg, R., **Johnson,** A. W., **Richardson,** K., and **Smith,** M. J. Thermal rearrangement of nickel 1-substituted tetradehydrocorrins, 1289.
Grigg, R., **Johnson,** A. W., and **Roche,** M. Synthesis of pemptoporphyrin, isopemptoporphyrin, and protoporphyrin IX dimethyl esters, 1928.
Grigor, J. See **Currie,** A. C., 1104.
Grimshaw, J., and **Jennings,** W. B. Dynopinacol (2-hydroxy-6-methyl-2,4,6-triphenylcyclohex-3-enyl phenyl ketone) and related compounds, 817.
Grimshaw, J., and **Millar,** P. G. Preparation and absolute configuration of the enantiomeric 3,4-dihydro-4-methylcoumarins, 2324.
Grimshaw, J. See also **Gourley,** R. N., 2318.
Grove, J. F. Phytotoxic compounds produced by *Fusarium equiseti*. Part V. Transformation products of 4β,15-diacetoxy-3α,7α-dihydroxy-12,13-epoxytrichothec-9-en-8-one and the structures of nivalenol and fusarenone. Part VI. 4β,8α,15-Triacetoxy-12,13-epoxytrichothec-9-ene-3α,7α-diol, 375, 378.
Grove, J. F. Metabolic products of *Stemphylium radicinum*. Part III. Biosynthesis of radicinin and pyrenophorin, 1860.
Grove, J. F. See also **Dawkins,** A. W., 369.
Grundmann, C. See **Datta,** S. K., 2058.
Grundon, M. F. See **Boyd,** D. R., 556.
Guest, I. G., and **Marples,** B. A. Steroids. Part X. Boron trifluoride-catalysed rearrangements of 5,6-epoxy-3β-hydroxy- and 5,6-epoxy-3β-methoxy-steroids, 1626.
Gunn, P. A. See **Appleton,** R. A., 1148.
Gunner, S. W., **King,** R. D., **Overend,** W. G., and **Williams,** N. R. Branched-chain sugars. Part X. The synthesis of branched-chain amino-sugars, 1954.
Gupta, D. N., **McCall,** I., **McLean,** A., and **Proctor,** G. R. Azabenzocycloheptenones. Part XII. Application of the Lansbury synthesis to the preparation of tetrahydro-1-benzazepin-3-ones, 2191.
Gupta, K. K. See **Azoo,** J. A., 1975.
Guthrie, R. D., **Prior,** A. M., and **Creasey,** S. E. Studies on the synthesis of methyl 2,3-anhydo-4,6-*O*-benzylidene-β-D-allopyranoside and -mannopyranoside, and their reaction with sodium azide, 1961.
Guthrie, R. D. See also **Buckingham,** J., 106, **Cleophax,** J., 1385, **El Shafei,** Z. M., 843, and **Gero,** S. D., 1402.
Gutmann, H. R. See **Yost,** Y., 2497.
Gutteridge, N. J. A., and **McGillan,** F. J. Oxidation of a 1-pyrroline 1-oxide and the corresponding 1-hydroxy-2-pyrrolidone, 641.

H

Habib, M. J. A., **Park,** J., and **Watts,** W. E. Stable carbonium ions. Part II. The properties of 1-ferrocenyl-3-arylallyl cations, 2556.
Habib, M. J. A., and **Watts,** W. E. Stable carbonium ions. Part I. 2-Ferrocenylnorbornan-2-yl cation, 2552.
Hackmann, J. T. See **Geevers,** J., 875.
Haddock, E., **Kirby,** P., and **Johnson,** A. W. 1,2,3-Benzothiadiazoles. Part II. A novel rearrangement of diazonium salts derived from 7-amino-1,2,3-benzothiadiazoles, 2514.
Haines, A. H., and **Lundie,** P. R. A synthesis of 2-*O*-methyl-L-ribose, 1691.
Halleux, A., and **Viehe,** H. G. Acylation of enamines with phosgene and the synthesis of heterocycles, 881.
Halliday, M. D. See **Diggle,** J. M., 2325.

Halmann, M., and **Schmidt,** H.-L. Cyanogen-induced synthesis of ^{18}O-labelled β-ribofuranose 1-phosphate and its acid-catalysed hydrolysis, 1191.
Halsall, T. G. See **Buchanan,** J. G., St. C., 2280, and **Cotterrell,** G. P., 739, 1503.
Hamer, N. K. See **Bishop,** R., 1193, 1197.
Hampson, N. A. See **Clarke,** T. G., 815.
Hanson, J. R., and **Organ,** T. D. A novel steroidal aromatization reaction, 513.
Androsta-2,4-diene-1,17-dione, 1065.
Applications of chromium(II) chloride. Part V. The reduction of some nitro-steroids, 1182.
Androsta-2,4-diene-6,17-dione, 2473.
Hanson, J. R., **Organ,** T. D., **Sim,** G. A., and **White,** D. N. J. Circular dichroism, nuclear magnetic resonance, and crystal structure of 4α-bromo-5α-androst-2-ene-1,17-dione, 2111.
Hanson, J. R. See also **Evans,** R., 2601.
Hara, H. See **Umezawa,** B., 465.
Hardy, F. E. Synthesis of *N*-halogeno-*N*-sodioalkanesulphonamides, 2087.
Harger, M. J. P. See **Corfield,** J. R., 1855.
Hargreaves, M. K. See **Arain,** R. A., 67, **Barrett,** G. C., 1986, and **Feeley,** T. M., 1745.
Harms, M. D. See **Boyd,** G. V., 800, 807.
Harper, D., and **Lamberton,** A. H. Nitramines and nitramides. Part XV. Some novel nitro-compounds prepared during a search for *N*-nitro-hydrazines, 1784.
Harper, S. H., **Kemp,** A. D., and **Tannock,** J. Methoxynaphthaldehydes as constituents of the heartwood of *Diospyros quiloensis* and their synthesis by the Stobbe condensation, 626.
Harrison, C. E. See **Bowman,** R. E., 94.
Harrison, D. M. See **Barton,** D. H. R., 775.
Harrison, D. R. See **Acheson,** R. M., 1764.
Harrison, J. M., and **Lynch,** M. F. Computer analysis of chemical reactions for storage and retrieval, 2082.
Harrison, M. J., and **Norman,** R. O. C. Reactions of lead tetra-acetate. Part XX. Oxidation of 2,4,6-tri-t-butylphenol, 728.
Harrison, P. G. See **Chapman,** A. C., 821, and **Davies,** A. G., 2030, 2035.
Harvey, D. J., and **Reid,** S. T. The synthesis of some 5-amino-1,2,3,4,4a,5,6,11b-octahydrobenzo[*a*]carbazoles, 2074.
Harvey, D. J. See also **Coombes,** G. E. A., 325.
Haslam, E. The stereochemistry of sesamolin, 2332.
Hassall, C. H., and **Thomas,** G. J. Tetracycline studies. Part III. Trimethylsilyl derivatives of tetracyclines, 636.
Hassall, C. H. See also **Ballantine,** J. A., 1175.
Hassanaili-Walji, A. See **Bycroft,** B. W., 1686.
Haszeldine, R. N., **Keen,** D. W., and **Tipping,** A. E. Free-radical additions to unsaturated systems. Part XVII. Reaction of trifluoroiodomethane with mixtures of ethylene and vinyl fluoride and of ethylene and propene, 414.
Haszeldine, R. N. See also **Banks,** R. E., 48, 55, 201, 1280, 2531, 2539, **Barlow,** M. G., 1232, **Birchall,** J. M., 449, 456, 1519, 2187, 2667, **Fields,** R., 197, 744, 1370, 2193, and **Gregory,** R., 1750.
Hatton, B. T. See **Fitton,** A. O., 1553, 2518.
Hatton, J. R. See **Bycroft,** B. W., 281.
Havlíčková, L., and **Arient,** J. Anthraquinone dyes. Part V. A contribution to the study of the Marschalk reaction. Nuclear methylation of 1-aminoanthraquinone leuco-derivative. Part VI. Nuclear alkylation of 1-aminoanthraquinone leuco-derivative, 567, 570.
Hayashi, N. See **Takeda,** K., 985.
Hayashi, S. See **Takeda,** K., 985.
Hayes, B. T., and **Stevens,** T. S. Reduction of nitrosamines to hydrazines, 1088.
Haynes, L. J., **Holdsworth,** D. K., and **Russell,** R. *C*-Glycosyl compounds. Part VI. Aloesin, a *C*-glucosylchromone from *aloe*, sp., 2581.
Heaney, H. See **Brewer,** J. P. N., 2569, and **Eckhard,** I. F., 2493.
Heap, J. M., and **Owen,** L. N. Thio-sugars. Part IV. Thio-analogues of 3,6-anhydro-sugars: a proof of the configuration of 3-thio-D-glucose. Part V. Rates of the nucleophilic substitution reactions of some 1,2:5,6-di-*O*-isopropylidene-3-*O*-tosyl-α-D-hexoses with potassium thiobenzoate, 707, 712.
Hedgley, E. J., and **Leon,** N. H. Glycerol esters of thiobenzoic *O*-acid and thioglycerol esters of benzoic acid, 467.
Hellberg, L. H., **Milligan,** R. J., and **Wilke,** R. N. Some reactions of enamines. Part II. Some alkylation reactions of the pyrrolidine enamines of 3,4-dihydronaphthalen-1(2*H*)-one and 6,7,8,9-tetrahydro-5*H*-benzocyclohepten-5-one, 35.
Heller, H. G., and **Salisbury,** K. Overcrowded molecules. Part IV. Thermal and photochemical electrocyclic reactions of *trans*-2-benzylidene-1-diphenylmethyleneindane and its 3-methyl derivative. Part V. Stereochemistry and stereospecific photochemical rearrangement reaction of 1,2-bisdiphenylmethylene-3-methylindane. Part VI. Photocyclisation of *cis*-9a,10-dihydro-9-methyl-10,15-diphenyl-9*H*-benzo[5,6]indeno-[2,1-*c*]phenanthrene, 399, 873, 1997.
Helmy, E. See **Jones,** D. N., 833.
Henbest, H. B., and **Mitchell,** T. R. B. Aspects of catalysis. Part I. Reduction of unhindered cyclohexanones to axial alcohols in the presence of a soluble iridium–phosphite catalyst, 785.
Henderson, M. A. See **Barber,** H. J., 862.
Hepburn, S. P. See **Forrester,** A. R., 1277.
Hewertson, W., and **Taylor,** I. C. The reaction of tetramethyldiphosphine with butadiene, 1990.
Hewertson, W., **Taylor,** I. C., and **Trippett,** S. The synthesis and rearrangement of alk-2-ynylphosphines, 1835.
Hewlett, C. See **Cubbon,** R. C. P., 501.
Hey, D. H. See **Davies,** D. I., 2653.
Heymes, A. See **Brienne,** M. J., 423.
Hickmott, P. W. See **Firrell,** N. F., 716, 1477.
Higgins, W. See **Jones,** D. N., 81.
Hildesheim, J. See **Cleophax,** J., 1385, and **Gero,** S. D., 1402.
Hill, J. Reactions of 1,3-dichloroacetone with phenols, 462.
Hill, J. See also **Collier,** J. R., 155.
Hill, R., **Bedford,** G. R., and **Webster,** B. R. The phenol dyestuff of Liebermann as an acridan derivative, 2462.
Hobson, J. D., and **Malpass,** J. R. The chemistry of azidotropones. Part III. Formation and decomposition of Δ^2-triazolines derived from norbornene, 1935.
Hodson, G., **Holt,** G., and **Wall,** D. K. Diazoketones from the interaction of diazoalkanes with carboxylic acid–dicyclohexylcarbodi-imide mixtures, 971.

Hoffman, W. F. See **Bloomer,** J. L., 1848.
Hogg, D. R., and **Vipond,** P. W. Thermal decomposition of t-butyl-2-nitrobenzenesulphenate, 60.
Nucleophilic substitution at bivalent sulphur. Part II. Trans-sulphenylation reactions of γ-hydroxyalkyl 2-nitrobenzenesulphenates, 2142.
Hohnjec, M. See **Škarič,** V., 2444.
Holdsworth, D. K. See **Haynes,** L. J., 2581.
Holland, J. M., and **Jones,** D. W. *o*-Quinonoid compounds. Part II. 1,4-Diphenyl-2-benzopyran-3-one and its iron carbonyl complexes. Part III. Benzopyran-3-ones and their salts, 530, 536.
Holliman, F. G. See **Bentley,** R. K., 2447.
Holman, R. J., and **Perkins,** M. J. A convenient synthesis of 2-methyl-2-nitrosopropane (' t-nitrosobutane '), 2195.
Holt, A. See **Bourne,** A. J., 1740.
Holt, G. See **Hodson,** D., 971.
Honda, T. See **Kametani,** T., 1060, 2342.
Hope, D. B., **Morgan,** C. D., and **Wälti,** M. Reduction of benzyl sulphonyl (sulphone) intermediates to sulphinic acids. Synthesis of hypotaurine, and of L-cysteine and L-homocysteine sulphinic acids, 270.
Hope, D. B., and **Wälti,** M. Synthesis of the α-hydroxy-analogues of *S*-benzylcysteine and cysteine, 2475.
Hopkins, B. J. See **Firrell,** N. F., 1477.
Hora, J., **Toube,** T. P., and **Weedon,** B. C. L. Carotenoids and related compounds. Part XXVII. Conversion of fucoxanthin into paracentrone, 241.
Horan, H. See **O'Donovan,** D. G., 2466.
Horibe, I. See **Takeda,** K., 973, 985, 1142, 1547, 2697, 2704.
Horler, D. F. (−)-Methyl n-tetradeca-*trans*-2,4,5-trienoate, an allenic ester produced by the male dried bean beetle, *Acanthoscelides obtectus* (Say), 859.
Horner, M. W., **Hough,** L., and **Richardson,** A. C. Selective benzoylation of methyl 2-benzamido-2-deoxy-α-D-glucopyranoside: a convenient preparation of derivatives of 2-amino-2-deoxy-D-galactose, 1336.
Horton, D. See **Mester,** L., 2567.
Horwell, D. C. See **Anderson,** D. J., 576.
Hosangadi, B. D. See **Ginde,** B. S., 1285.
Hoshino, O. See **Umezawa,** B., 465.
Hoskins, J. A. See **Gore,** P. H., 517.
Hough, L. See **Horner,** M. W., 1336.
Houghton, L. E. See **Clinging,** R., 897, and **Dean,** F. M., 722.
Houghton, R. P. See **Chapman,** P. H., 1183.
Howarth, G. B., **Szarek,** W. A., and **Jones,** J. K. N. The synthesis of lincomycin, 2218.
Hsieh, R. S. See **Manhas,** M. S., 116.
Hubbard, A. F. See **Fields,** R., 2193.
Hubbard, R. See **Barlow,** M. G., 1232.
Hudson, H. R. See **Chaudri,** B. A., 1329.
Hudson, J. A. See **George,** C., 74.
Hughes, C. G. See **Chapman,** N. B., 2269, 2431, and **Clarke,** K., 1013.
Hughes, N. W. See **Shoppee,** C. W., 558, 1443.
Hulley, R. M. See **Gray,** E. A., 986.
Humphries, A. J. See **Clarke,** K., 1013.
Huneck, S. See **Aberhart,** D. J., 1612.
Hunedy, F. See **Brimacombe,** J. S., 1273.
Hunt, B. J., and **Rigby,** W. Gamboge. Part IV. Scission of gambogic acid by alkali, 2459.
Hunter, I. See **Acheson,** R. M., 1067.
Husain, A. See **Brimacombe,** J. S., 1273.
Husbands, G. E. M. See **Stuart,** K. L., 1228.

I

Iddon, B. See **Ager,** E., 193, 1530, and **Dickinson,** R. P., 1926, 2592.
Idoux, J. P. Selective reduction of nitroaromatic compounds, 435.
Ihara, M. See **Kametani,** T., 1060, 2342.
Inch, T. D., and **Williams,** N. Structural assignments of some 2,2,4-trisubstituted 1,3-dioxolans, 263.
Inoue, I., and **Ban,** Y. Studies on the synthesis of *Aspidosperma* and related alkaloids. Part II. A synthetic approach to the C-21 oxygenated *Aspidosperma* alkaloids, 602.
Iorio, M. A., and **Casy,** A. F. Synthesis, configuration, and dehydration of some 1-alkyl- and aralkyl-3-methyl-4-*o*-tolylpiperidin-4-ols, 135.
Ishii, H. See **Funke,** E., 2548.
Iskander, G. N., **Sarrag,** S. A., and **Stansfield,** F. 2-Naphthol derivatives from 1,1-dichloronaphthalen-2(1*H*)-one, 1701.
Iveson, P., and **Parke,** D. V. The preparation and chemical properties of some glycuronyl esters of β-glycyrrhetic acid (3β-hydroxy-11-oxo-olean-12-en-30-oic acid) and its derivatives, 2038.

J

Jackson, A. H. See **Biswas,** K. M., 1667.
Jackson, J. L. See **Grigg,** R., 552.
Jackson, W. R. See **Gray,** G. A., 1788.
Jacques, J. See **Brienne,** M. J., 423.
Jacquignon, P. See **Buu-Hoï,** N. P., 1058.
Jaffari, G. A., **Nunn,** A. J., and **Ralph,** J. T. 1,2,3-Benzothiadiazole. Part VI. Investigations on the quaternisation of 1,2,3-benzothiadiazole and 1,2,3-benzoselenadiazole, 2060.
Jaitly, S. B. See **Coombs,** M. M., 1266.
Jarvie, A. W. P. See **Bourne,** A. J., 1740.
Jeffreys, J. A. D. The alkaloids of perennial rye-grass (*Lolium perenne* L.). Part IV. Isolation of a new base, perlolyrine; the crystal structure of its hydrobromide dihydrate, and the synthesis of the base, 1091.
Jennings, W. B. See **Grimshaw,** J., 817.
Jessup, H. A. See **Pinkus,** J. L., 242.
Jibodu, K. O., **Ohochuku,** N. S., and **Taylor,** D. A. H. Chemical shifts of the tertiary methyl groups in the nuclear magnetic resonance spectra of some limonoids. Part II., 2396.
Johnson, A. M. See **Davoll,** J., 997.
Johnson, A. W. See **Bycroft,** B. W., 1686, **Grigg,** R., 1289, 1928, and **Haddock,** E., 2514.
Johnson, B. J., and **Trask,** E. G. Linear polypeptides of a known repeating sequence of amino-acids. Synthesis of poly-(L-tyrosyl-L-glutamyl-L-valylglycyl)[1-^{14}C]glycine ethyl ester, 2247.
Johnson, M. G. See **Brewer,** J. P. N., 2569.
Johnson, P. G. See **Bourne,** E. J., 1561.
Johnson, R. S., **Lovett,** T. O., and **Stevens,** T. S. The alkaloids of *Gelsemium sempervirens*. Part IV. Derivatives of pyridine, isoquinoline, and indol-2(3*H*)-one as possible initial materials for synthesis of gelsemine, 796.
Johnstone, R. A. W., **Payling,** D. W., **Preston,** P. N., **Stevens,** H. N. E., and **Stevens,** M. F. G. Mass spectra of diaryltriazenes and 1,2,3-benzotriazines, 1238.

Jones, B. J. See **Acheson,** R. M., 1301.
Jones, D. F., **Moore,** R. H., and **Crawley,** G. C. Microbial modification of mycophenolic acid, 1725.
Jones, D. N., and **Graysham,** R. Conformational free energy differences in steroids. Part V. Equilibration of 5α- and 5β-androstan-6-one derivatives structurally modified in ring D, 2421.
Jones, D. N., **Grayshan,** R., and **Wyse,** K. J. Conformational free energy differences in steroids. Part IV. Conformational preference of the [$^2H_3$]methyl group, 2027.
Jones, D. N., **Helmy,** E., and **Edmonds,** A. C. F. Steroidal sulphur compounds. Part VII. Pyrolysis and chiroptical properties of 3-alkylsulphinyl-5α-cholestanes, 833.
Jones, D. N., and **Higgins,** W. Steroidal sulphur compounds. Part VI. Steric effects in the pyrolytic elimination of sulphinate esters, 81.
Jones, D. W. See **Holland,** J. M., 530, 536.
Jones, Sir Ewart R. H. See **Bridgeman,** J. E., 244, 250, and **Chin,** C., 314.
Jones, G. A synthesis of cyclohepta-2,4,6-trienones, 1230.
Jones, G. See also **Cliff,** G. R., 1490, **Davies,** L. S., 688, and **Good,** R. H., 1938.
Jones, J. G. L., and **Marples,** B. A. Steroids. Part IX. Enamines from 6α-azidocholest-4-en-3-one and 2β-azidocholestan-3-one. Part XI. Westphalen-type rearrangements of 5α-hydroxy-4,4-dimethyl-steroids, 1188, 2273.
Jones, J. K. N. See **Howarth,** G. B., 2218.
Jones, R. A. See **Candy,** C. F., 2563.
Jordens, P., **Rawson,** G., and **Wynberg,** H. Synthesis of cyclopentadithiophenones, 273.

K

Kamata, S. See **Nagate,** W., 540.
Kametani, T., **Fukumoto,** K., **Kawatzu,** M., and **Fujihara,** M. Studies on the syntheses of heterocyclic compounds. Part CCCXIII. Phenolic oxidative coupling of a dihydroxy-1-phenethyl-1,2,3,4-tetrahydroisoquinoline, 922.
Abnormal products of the Pschorr reaction of 8-amino-1,2,3,4-tetrahydro-1-phenethylisoquinoline, 2209.
Kametani, T., **Ihara,** M., and **Honda,** T. The alkaloids of *Corydalis pallida* var. tenuis (Yatabe) and the structures of pallidine and kikemanine, 1060.
Elucidation of the structure of capaurimine, 2342.
Kametani, T., **Satoh,** F., **Yagi,** H., and **Fukumoto,** K. Configuration and rearrangements of homoproaporphines, 382.
Kametani, T., **Sugahara,** T., **Yagi,** H., **Fukumoto,** K., **Pai,** B. R., and **Charubala.** An approach to the synthesis of sinomenine, 624.
Kametani, T., **Sugi,** H., **Yagi,** H., **Fukumoto,** K., and **Shibuya,** S. Synthesis and stereochemistry of 1,2,3,4-tetrahydro-6-methoxy-2-methyl-1-phenylisoquinoline and related compounds, 2213.
Kametani, T., **Yamanaka,** T., **Ogasawara,** K., and **Fukumoto,** K. Nitrene. Part VI. Reaction of 6′-nitropapavarine and its analogue with triethyl phosphite, 380.
Kanematsu, K. See **Sasaki,** T., 481.
Kaplan, E. R., **Naidu,** K., and **Rivett,** D. E. A. Diterpenoids of *Leonotis* species. Part III. 8β-Hydroxymarrubiin from *L. dysophylla* Benth., 1656.
Karim, A. See **Blessington,** B., 1703, and **Mathieson,** D. W., 1705.
Kasal, A. See **Bridgeman,** J. E., 244, 250, and **Diggle,** J. M., 2325.
Kashima, C., **Yamamoto,** M., and **Sugiyama,** N. Ultraviolet spectral study of β-amino-enones, 111.
Kasturi, T. R., **Arunachalam,** T., and **Subrahmanyam,** G. Reactions of tetrahalogeno-1,2-benzoquinones. Part III. Reaction of tetrachloro-1,2-benzoquinone with tetralones and naphthols: pathway to the condensates, 1257.
Katayama, H. See **Fujita,** E., 1674, 1681.
Katayama, T. See **Minato,** H., 45.
Kaufman, K. D. See **Worden,** L. R., 227.
Kawai, M. See **Matsuura,** T., 664.
Kawatzu, M. See **Kametani,** T., 922, 2209.
Kay, I. T., **Lovejoy,** D. J., and **Glue,** S. The synthesis of potential insecticides. Part II. Carbamic esters of 4-alkylthiopyrazolones, 445.
Kay, I. T., and **Punja,** N. The synthesis of potential insecticides. Part III. Carbamic esters of 3-cyano-4-hydroxy-thiophens and -pyrroles, 2409.
Keen, D. W. See **Haszeldine,** R. N., 414.
Kelly, A. H., and **Parrick,** J. Diazaindenes (azaindoles). Part II. Thermal indolisation of 3- and 4-pyridylhydrazones, 303.
Kelly, A. H. See also **Clark,** B. A. J., 498.
Kelly, P. B. See **Pauson,** P. L., 1323.
Kemp, A. D. See **Harper,** S. H., 626.
Kemp, J. E. G. See **Birchall,** J. M., 449, 1519.
Kennard, O. See **Allen,** D. W., 810.
Kennedy, J. D. See **Davies,** A. G., 759, 1570.
Keogh, M. F., and **O'Donovan,** D. G. Biosynthesis of some alkaloids of *Punica granatum* and *Withania somnifera*, 1792.
Biosynthesis of lobeline, 2470.
Kerr, D. A., and **Wilson,** D. A. Reactions of diaryl oximes with dimethyl sulphoxide–dicyclohexylcarbodi-imide–acid. Some reactions of *N*-(methylthiomethyl)nitrones, 1718.
Khaliel, M. K. See **Sakla,** A. B., 409.
Khan, M. A., and **Polya,** J. B. Syntheses of heterocyclic compounds. Part II. *N*-Arylazoles by Ullmann condensation, 85.
Khwaja, T. A., **Reese,** C. B., and **Stewart,** J. C. M. A convenient general procedure for the conversion of alcohols into their monophosphate esters, 2092.
Killick, R. W. See **Shoppee,** C. W., 1513.
King, J. A. G., **Percival,** A., **Robson,** N. C., and **Swan,** G. A. Studies related to the chemistry of melanins. Part XI. The distribution of the polymeric linkages in dopamelanin, 1418.
King, J. A. G. See also **Binns,** F., 1134, 2063.
King, R. D. See **Gunner,** S. W., 1954.
King, T. J. See **Bycroft,** B. W., 1686.
Kingston, D. G. I., **Tannenbaum,** H. P., **Baker,** G. B., **Dimmock,** J. R., and **Taylor,** W. G. Mass spectrometry of organic compounds. Part V. Mass spectra of substituted aroylhydrazones, 2574.
Kirby, G. W. See **Bennett,** D. J., 2049, and **Bhandarkar,** J. G., 592, 1224.
Kirby, P., **Soloway,** S. B., **Davies,** J. H., and **Webb,** S. B. 1,2,3-Benzothiadiazoles. Part I. A simplified synthesis of 1,2,3-benzothiadiazoles, 2250.
Kirby, P. See also **Haddock, E.,** 2514.

Kirk, D. N., **Klyne,** W., **Peach,** C. M., and **Wilson,** M. A. D-Homo-steroids. Part I. Derivatives monosubstituted in ring D, 1454.

Kirk, D. N., **Klyne,** W., and **Wallis,** S. R. Optical rotatory dispersion. Part LXIV. Influence of solvents upon the Cotton effects of some ketones, 350.

Kirk, D. N., and **Mudd,** A. Side-chain conformations of 5α,17α-pregnan-20α- and 20β-ols: a nuclear magnetic resonance study, 853.

D-Homo-steroids. Part II. A study of the mechanism of base-catalysed D-homoannulation of 3β-17α-dihydroxy-5α-pregnan-20-one, 2045.

Kirk, D. N., and **Rowell,** F. J. Urinary steroids. Part VIII. An exploration of routes to pregnane-20α,21-diol derivatives, 1498.

Kirk, D. N., and **Shaw,** P. M. Elimination reactions and configurations of 1-methylcyclohexyl derivatives, including steroid analogues, 182.

Kirk, D. N. See also **Bartlett,** L., 2678.

Kirman, J. See **Fields,** R., 197.

Klein, J., and **Aminadav,** N. The stereochemistry of the reaction of Grignard and lithium reagents with phenyl- and methyl-propiolic acids, 1380.

Klyne, W. See **Bartlett,** L., 2678, **Brienne,** M. J., 423, and **Kirk,** D. N., 350, 1454.

Knight, D. C. See **Boar,** R. B., 678.

Kobayashi, T. See **Armarego,** W. L. F., 1597.

Kodicek, E. See **Pelc,** B., 1624.

Kojima, A. See **Sasaki,** T., 476.

Kolinski, R. A., and **Urbanski,** T. Chemistry of nitroparaffins. Part LXXXVIII. Diastereoisomeric derivatives of 5-ethyl-5-nitrotetrahydro-1,3-oxazines, 1004.

Kon, H. See **Lousberg,** R. J. J. C., 2154.

Krishnamoorthy, V. See **Brown,** P. M., 109.

Kruger, P. E. J., and **Perold,** G. W. Conocarpin, a leucodrin-type metabolite of *Leucospermum conocarpodendron* (L.) Buek, 2127.

Kubota, T., and **Matsutani,** S. Studies on the antibiotic nigericin (polyetherin A), 695.

Kudav, N. A. See **Ginde,** B. S., 1285.

Kulik, S. See **Cadogan,** J. I. G., 2437.

Kulkarni, A. B. See **Ginde,** B. S., 1285.

Kumar, V. See **Bridgeman,** J. E., 250.

Kurzer, F. Heterocyclic compounds from urea derivatives. Part XVIII. Adducts from aminoguanidines and aroyl isothiocyanates and their cyclisation. Part XIX. Adducts from diaminoguanidines and aroyl isothiocyanates and their cyclisation, 1805, 1813.

Kurzer, F., and **Wilkinson,** M. Heterocyclic compounds from urea derivatives. Part XVI. Interaction of carbonohydrazide and carbodi-imides. Part XVII. Reactions of 1-phenylcarbonohydrazide and 1-phenylthiocarbonohydrazide with carbodi-imides, 19, 26.

L

Lack, R. E., and **Ridley,** A. B. 19-Nor and aromatic steroids. Part I. The cleavage of 3-oxygenated-2β,19-ethers in the cholestane series, 1437.

Lack, R. E. See also **Shoppee,** C. W., 1443, 1893.

Lambert, M. C. See **Beresford,** P., 2508.

Lamberton, A. H. See **Harper,** D., 1784.

Lancaster, J. C., and **McWhinnie,** W. R. The synthesis and spectra of some mono-substituted tri-(2-pyridyl)-amines, 2435.

Landquist, J. K. Oxidative cyclisation of ketone thiosemicarbazones. Part I. 4-Methyl- and 4-aryl-thiosemicarbazones. Part II. Derivatives of phenoxyacetone, 63, 323.

Lane, A. G. See **Gagan,** J. M. F., 2484.

Larkin, J., **Murray,** M. G., and **Nonhebel,** D. C. Reactions of β-diketones with hydroxylamine hydrochloride; synthesis of 3,5-disubstituted isoazoles, 947.

Lawrie, W. See **Adhikary,** S. P., 1030.

Lawson, A., and **Tinkler,** R. B. α Amino-sulphonic acid derivatives. Part II. Synthesis and ring closure of some iodomethylsulphonylbenzamidines and -guanidines, 1429.

Leardini, R., **Martelli,** G., **Spagnolo,** P., and **Tiecco,** M. Metalation and halogen–metal exchange in 3-arylthiophens, 1464.

Leaver, D. See **Brown,** E. I. G., 1202.

Ledwith, A., and **Woods,** H. J. Charge transfer spectra and reaction intermediates. Part II. Stable crystalline complexes from phenols and *NN'*-dimethyl-4,4'-bipyridylium (paraquat) salts, 1422.

Ledwith, A. See also **Beresford,** P., 2508.

Lee, J. See **Chin,** C., 314.

Lee, J. B. See **Clarke,** T. G., 815.

Lee, T.-C. See **Brown,** D. J., 214.

Leon, N. H. See **Hedgley,** E. J., 467.

Lewis, J. R., and **Reary,** J. B. The synthesis of pyranoxanthenones containing a dimethylchromen system, 1622.

Lewis, J. W., and **Mayor,** P. A. Enamines related to pethidine, 1074.

Lewis, J. W., **Myers,** P. L., and **Readhead,** M. J. Reactions of enamines with benzaldehyde and benzylidenecyclohexanone, 771.

Lewis, J. W., and **Rushworth,** W. I. Novel analgesics and molecular rearrangements in the morphine–thebaine group. Part XVII. Compounds related to the thebaine–maleic anhydride adduct, 560.

Lewis, R. See Fitton, A. O., 1553.

Lindsay, G. See **Brooks,** C. J. W., 203.

Lindsay, D. G. See **Abramson,** F. B., 1042.

Liotta, D. See **Engel,** R. R., 523.

Lister, J. H., **Manners,** D. S., and **Timmis,** G. M. Potentially chemotherapeutic purine analogues. Part V. Some hydrazone derivatives of pyrazole-4,5-diones and their cyclisation to pyrazolo[3,4-*e*][1,2,4]triazines, 1313.

Liston, A. J., **Toft,** P., **Morand,** P., and **Stollar,** H. Conformational transmission. Part II. The effect of a 7,8-double bond on the enol acetylation properties of 3-oxo-5β-steroids, 2121.

Livingstone, R. See **Cotterill,** W. D., 1006, 1758.

Lloyd, D., and **Preston,** N. W. Cyclopenta[*d*]pyridazines and cyclopenta[*d*][1,2]oxazines, 610.

Lloyd, D. See also **Gagan,** J. M. F., 2484, 2488, and **Gorringe,** A. M., 617.

Loader, C. E. See **Blackburn,** E. V., 163.

Locke, J. M. See **Duck,** E. W., 2000.

Locksley, H. D., and **Murray,** I. G. Extractives from Guttiferae. Part XVI. Biogenetic-type synthesis of xanthones from their benzophenone precursors, 392.

Longridge, J. L., and **Thompson,** T. W. The zinc–acetic acid catalysed ring contraction of pyrimidines to pyrroles, 1658.

Lousberg, R. J. J. C., **Paolillo**, L., **Kon**, H., **Weiss**, U., and **Salemink**, C. A. Pigments of *Elsinoe* species. Part IV. Confirmatory evidence for the structure of elsinochrome A and its ethers from studies of nuclear magnetic resonance (solvent and Overhauser effects) and electron spin resonance, 2154.

Lousberg, R. J. J. C., **Weiss**, U., and **Salemink**, C. A. Pigments of *Elsinoe* species. Part III. Methylation of elsinochrome A. Formation of mono- and di-methyl ethers. Part V. The structure of elsinochrome D, 2152, 2159.

Loutfy, R. O. See **Baddar**, F. G., 620.

Lovejoy, D. J. See **Kay**, I. T., 445.

Lovett, T. O. See **Johnson**, R. S., 796.

Lown, J. W. See **Dallas**, G., 2383.

Lundie, P. R. See **Haines**, A. H., 1691.

Lunn, W. H. W. Functionalization and cleavage of adamantane with lead tetra-acetate; the formation of 2(3 → 4)*abeo*-adamantane from adamantane, 2124.

Lunt, E., and **Wragg**, W. R. Hypotensive amines: unbridged cyclohexane analogues of mecamylamine, 1845.

Lyall, J. M. See **Morand**, P., 2117.

Lynch, M. F. See **Crowe**, J. E., 990, and **Harrison**, J. M., 2082.

M

MacBride, J. A. H. See **Allison**, C. G., 1023.

McCall, I., **Proctor**, G. R., and **Purdie**, L. Reactions of methyl anthranilate with ethyl γ-bromobutyrate, 1126.

McCall, I. See also **Gupta**, D. N., 2191.

Macchia, B. See **Barili**, P. L., 1168.

Macchia, F. See **Barili**, P. L., 1168.

McCrindle, R. See **Appleton**, R. A., 1148.

Macdonald, I., and **Proctor**, G. R. Azabenzocycloheptenones. Part XI. Synthesis and some reactions of the tetrahydrobenz[*c*]azepin-5-one system, 1461.

Macdonald, P. L. See **Birch**, A. J., 1469.

McFarlane, W. See **Chapman**, A. C., 821.

McGhie, J. F. See **Barton**, D. H. R., 1033, and **Boar**, R. B., 678.

McGillan, F. J. See **Gutteridge**, N. J. A., 641.

McGlinchey, M. J. See **Banks**, R. E., 1017, 2172.

Mackay, W. D. See **Findlay**, J. A., 2631.

McKenna, J. See **Wall**, E. N., 188.

Mackenzie, K., and **Young**, P. R. Nucleophilic elimination, substitution, addition, and cyclisation reactions of polychlorocyclopentadiene dimers, 1242.

McKenzie, S., and **Reid**, D. H. Studies of heterocyclic compounds. Part VII. Thioformylindolizines, 145.

MacKenzie, S. M., and **Stevens**, M. F. G. Triazines and related products. Part VI. Synthesis and properties of 4-amino-2(2*H*)-imino-*s*-triazino-[1,2-*c*][1,2,3]-benzotriazines, 2298.

McKinney, R. M., and **Churchill**, F. C. II. Reaction paths to pure 5- and 6-aminofluorescein. Pitfalls encountered in conventional synthesis procedures, 654.

McKinnon, D. M. See **Brown**, E. I. G., 1202.

McLean, A. See **Gupta**, D. N., 2191.

McLean, J. See **Adhikary**, S. P., 1030.

MacMillan, J. See **Barnes**, M. F., 1341.

McMurry, T. B. H., and **Rane**, D. F. Chemistry of santonene. Part V. The stereochemistry of γ-metasantonin, 2012.

McMurry, T. B. H. See also **East**, D. S. R., 2008.

McOmie, J. F. W., and **West**, D. E. Biphenylenes. Part XXVI. Reactions of 2,3,6,7-tetramethoxy-1,8-dimethylbiphenylene and of 6,7-dimethoxy-1,8-dimethylbiphenylene-2,3-quinone, 1084.

McOmie, J. F. W. See also **Gardner**, D. V., 2500.

McQuillin, F. J. See **Dunne**, K., 2196, 2200, 2203.

McWatt, I., **Phillips**, D., and **Proctor**, G. R. Cyclopentane chemistry. Part I. Some observations on 2-hydroxy-3-methylcyclopent-2-enone, 593.

McWhinnie, W. R. See **Lancaster**, J. C., 2435.

Main, B. G. See **Davies**, H. J., 327.

Maitland, D. J. See **Bacon**, R. G. R., 1973.

Malpass, J. R. See **Hobson**, J. D., 1935.

Manhas, M. S., **Hsieh**, R. S., and **Bose**, A. K. Mass spectral studies. Part VII. Unusual fragmentation of some *N*-trifluoroacetyl amino-acid methyl esters, 116.

Mann, F. G. See **Allen**, D. W., 810.

Mann, J. See **Banthorpe**, D. V., 2689.

Manners, D. S. See **Lister**, J. H., 1313.

Margni, A. L., **Giacopello**, D., and **Deulofeu**, V. Synthesis of 5,6,7,8-tetrahydro-7-methyldibenz[*c*,*g*]azecin-14(13*H*)-one: the structural skeleton of the protopine alkaloids, 2578.

Markham, K. R. See **Porter**, L. J., 344, 1309.

Marlow, W. See **Fletcher**, P., 937.

Marples, B. A. See **Brewer**, J. P. N., 2569, **Eckhard**, I. F., 2493, **Guest**, I. G., 1626, and **Jones**, J. G. L., 1188, 2273.

Marr, G., and **White**, T. M. Organometallic derivatives. Part I. Heteroannularly substituted trimethylsilylferrocenes, 1789.

Marshall, D. R. See **Gorringe**, A. M., 617.

Marshall, R., **Sears**, D. J., and **Smith**, D. M. *o*-Nitroaniline derivatives. Part I. The preparation and stability of *o*-nitroanils, 2144.

Marshall, R. See also **Cadogan**, J. I. G., 2441.

Martelli, G. See **De Luca**, G., 2504, and **Leardini**, R., 1464.

Martin, A., and **Murray**, R. D. H. Constituents of *Erythroxylon monogynum* Roxb. Part VI. Unusual oxidation reactions, 2023.

Martin-Smith, M. See **Brophy**, G. C., 933.

Mason, T. J. See **Baker**, R., 596.

Mathieson, D. W., and **Karim**, A. The configuration of the 14-methyl group in cassamic acid and its congeners, 1705.

Mathieson, D. W. See also **Blessington**, B., 1703.

Mathieson, J. W. See **Brown**, P. M., 109.

Matsumoto, M. See **Minato**, H., 38.

Matsuoka, H. See **Nishiwaki**, T., 1825.

Matsutani, S. See **Kubota**, T., 695.

Matsuura, T., **Kawai**, M., **Nakashima**, R., and **Butsugan**, Y. Structures of physalin A and physalin B, 13,14-seco-16,24-cyclo-steroids from *Physalis alkekengi* var. *Francheti*, 664.

Matsuura, T. See also **Nishinaga**, A., 2613, and **Takeda**, K., 985.

Mayor, P. A. See **Lewis**, J. W., 1074.

Mazarakis, P. See **Photaki**, I., 2683.

Meakins, G. D. See **Andrews**, A. T. de B., 1052, **Bingham**, K. D., 2330, **Bridgeman**, J. E., 244, 250, and **Diggle**, J. M., 2325.

Meck, R. See **Carroll**, F. I., 1993.

Mehta, M. D. See **Greenhill**, J. V., 1549.

Melloni, G. See **Capozzi**, G., 2617, 2621, 2625.

Mensah, I. A. See **Baxter**, I., 2604.

Mester, L., **El Khadem,** H., and **Horton,** D. Structure of saccharide osazones, 2567.
Meth-Cohn, O., **Thorpe,** D., and **Twitchett,** H. J. Insertion reactions of titanium alkoxides with isocyanates and carbodi-imides, 132.
Michalski, J., and **Skrowrońska,** A. Organophosphorus compounds. Part CXXXVI. Thiopyrophosphate synthesis by condensation of oxophosphoranesulphenyl chlorides with trialkyl phosphites and their structural analogues, 703.
Millar, P. G. See **Gourley,** R. N., 2318, and **Grimshaw,** J., 2324.
Millard, B. J., and **Pain,** D. L. High resolution mass spectrometry. Part VII. 1,2,3-Thiadiazole derivatives, 2042.
Miller, H. W. See **Carroll,** F. I., 1993.
Milligan, R. J. See **Hellberg,** L. H., 35.
Minato, H., and **Katayama,** T. Studies on the metabolites of *Zygosporium masonii*. Part II. Structure of zygosporins D, E, F, and G, 45.
Minato, H., and **Matsumoto,** M. Studies on the metabolites of *Zygosporium masonii*. Part I. Structure of zygosporin A, 38.
Minato, H. See also **Takeda,** K., 973, 985, 1142, 1547, 2697, 2704.
Minisci, F. See **Gardini,** G. P., 929.
Mirza, J., **Pfleiderer,** W., **Brewer,** A. D., **Stuart,** A., and **Wood,** H. C. S. Pyrimidines. Part XXIII. Synthesis of pyrimido[4,5-*b*][1,4]oxazines by reaction of 4,5-diaminopyrimidine derivatives with α-halogeno-ketones, 437.
Mishra, S. N. See **Binns,** F., 2063.
Mishrikey, M. M. See **El-Kholy,** I. E.-S., 1578.
Mitchell, E. W. See **Edmundson,** R. S., 752.
Mitchell, R. H. See **Garratt,** P. J., 2137.
Mitchell, T. R. B. See **Henbest,** H. B., 785.
Mitsubayashi, S. See **Umezawa,** B., 465.
Modena, G. See **Capozzi,** G., 2617, 2621, 2625.
Modena, M. See **Piccardi,** P., 949.
Mollan, R. C. See **East,** D. S. R., 2008.
Montanari, F. See **Cinquini,** M., 572.
Monti, L. See **Barili,** P. L., 1168.
Moon, B. J. See **Sainsbury,** M., 1797.
Moorcroft, D. See **Robinson,** B., 2077.
Moore, G. J. See **Banks,** R. E., 1017.
Moore, R. H. See **Jones,** D. F., 1725.
Moran, T. A. See **Edmundson,** R. S., 1009.
Morand, P., **Lyall,** J. M., and **Stollar,** H. Reactions of Δ^7-steroids. Part III. Conformational transmission effects in the methylation of 5β-cholest-7-en-3-one, 2117.
Morand, P. See also **Liston,** A. J., 2121.
Morgan, C. D. See **Hope,** D. B., 270.
Morisawa, Y. See **Bridgeman,** J. E., 250.
Morley, J. O. See **Birchall,** J. M., 456, 2667.
Morley, J. R. See **Clarke,** T. G., 815.
Morton, M. S. See **Clark,** J., 494.
Mose, W. P., and **Scopes,** P. M. Optical rotatory dispersion and circular dichroism. Part LXVIII. Low temperature circular dichroism of etianic acids (androstane-17-carboxylic acids) and related compounds, 2417.
Mose, W. P. See also **Green,** N. M., 1330.
Moser, J. P. See **Dallas,** G., 2383.
Mosnaim, A. D., and **Nonhebel,** D. C. Reactions of copper(II) halides with organic compounds. Part VI. Reactions of 9-alkyl- and 9-aryl-10-halogenoanthracenes, 942.
Moss, G. P., **Toube,** T. P., and **Murphy,** J. W. Structure of the limonoid triterpene zapoterin, 694.
Moss, G. P. See also **Barton,** D. H. R., 775.
Moss, V. A. See **Bennett,** D. J., 2049.
Motherwell, W. D. S. See **Allen,** D. W., 810.
Mudd, A. See **Kirk,** D. N., 853, 2045.
Muircheartaigh, S. F. Ó. See **Connolly,** J. P., 508.
Mullock, E. B., **Searby,** R., and **Suschitzky,** H. Synthetic uses of polyphosphoric acid and its ethyl ester. Part II. Syntheses of indolin-2(3*H*)-ones and imidazoquinolines, 829.
Murakami, M. See **Nagata,** W., 2355.
Murphy, C. F. See **Cooper,** R. D. G., 340.
Murphy, J. J. See **Donnelly,** J. A., 2596.
Murphy, J. W. See **Moss,** G. P., 694.
Murray, A. W., and **Vaughan,** K. Thermolysis of 1,2,3-benzotriazin-4(3*H*)-one, 2070.
Murray, I. G. See **Locksley,** H. D., 392.
Murray, M. See **Brown,** C., 878.
Murray, M. G., and **Nonhebel,** D. C. Acylation of metal chelates. Part V. The influence of electronic effects in the β-diketone ligand, 1172.
Murray, M. G. See also **Larkin,** J., 947.
Murray, R. D. H. See **Martin,** A., 2023.
Musgrave, O. C. See **Bowie,** R. A., 485, 2228, and **Coutts,** I. G. C., 488, 2225.
Musgrave, W. K. R. See **Allison,** C. G., 1023, and **Feast,** W. J., 2429.
Myers, P. L. See **Cross,** B. E., 930, and **Lewis,** J. W., 771.

N

Nababsing, P. See **Bass,** K. C., 2169.
Nagata, W., and **Kamata,** S. Preparation and reactions of cyclic α-monocarbonyl azo-compounds: 1-pyrazolin-3-one derivatives, 540.
Nagata, W., **Okumura,** T., and **Yoshioka,** M. Hydrocyanation. Part VIII. Conjugate hydrocyanation of steroidal αβ-unsaturated carboxylic acid derivatives. Part X. Cleavage of epoxides with hydrogen cyanide and triethylaluminium and with diethylaluminium cyanide, 2347, 2365.
Nagata, W., **Yoshioka,** M., **Okumura,** T., and **Murakami,** M. Hydrocyanation. Part IX. Synthesis of β-cyanoaldehydes by conjugate hydrocyanation of allylideneamines followed by hydrolysis, 2355.
Naidu, K. See **Kaplan,** E. R., 1656.
Nakano, A. See **Nishiwaki,** T., 1825.
Nakano, T., and **Votický,** Z. Buxus alkaloids. Part IX. Interconversion of cyclobuxine D and cyclobuxosuffrine, 590.
Nakashima, R. See **Matsuura,** T., 664.
Narang, K. S. See **Singh,** A., 1114.
Nayak, K. V. See **Ginde,** B. S., 1285.
Neidle, S., **Rogers,** D., and **Allen,** F. H. A reference list of organic structures whose absolute configurations have been determined by *X*-ray methods. Part IV, 2340.
Neilson, D. G. See **Fahey,** J. L., 719.
Neiman, Z. Reduction of quaternary pteridines and purines by sodium borohydride, 91.
Nesi, R. See **Adembri,** G., 1536.
Newman, B. C. See **Shoppee,** C. W., 558.
Newman, G. A. See **Feeney,** J., 1842.
Niazi, G. A. See **Alder,** R. W., 1693.

Nichol, A. W. Formylation of iron(III) porphyrins and chlorins of natural origin, 903.
Nishinaga, A., **Ziemek,** P., and **Matsuura,** T. Competition between substitution and electron transfer in some 1,4-dialkoxybenzenes in concentrated sulphuric acid and the influence of the *ortho*-substituent on the β-proton splitting constants of their cation radicals, 2613.
Nishiwaki, T., **Nakano,** A., and **Matsuoka,** H. Studies on heterocyclic chemistry. Part VII. Thermally induced dimerization of 5-aminoisoxazoles and 2*H*-azirines and photochemistry of 5-aminoisoxazoles, 1825.
Nonhebel, D. C. See **Larkin,** J., 947, **Mosnaim,** A. D., 942, and **Murray,** M. G., 1172.
Norman, R. O. C. See **Bingham,** A. J., 1879, and **Harrison,** M. J., 728.
Norton, K. B. See **Bull,** J. R., 1592.
Nouls, J. C. See **Van Binst,** G., 150.
Novitt, B. See **Ames,** D. E., 1700.
Nunn, A. J. See **Jaffari,** G. A., 2060.
Nunn, E. E. See **Browne,** E. J., 1515.

O

O'Donovan, D. G., and **Horan,** H. The biosynthesis of arborine, 2466.
O'Donovan, D. G. See also **Keogh,** M. F., 1792, 2470.
Ogasawara, K. See **Kametani,** T., 380.
Ogata, Y., and **Urasaki,** I. Iodination of acenaphthene and fluorene with iodine–peracetic acid, 1689.
Ogilvy, M. M. See **Forrester,** A. R., 1081.
Ohochuku, N. S., and **Taylor,** D. A. H. 6β-Hydroxygedunin, 421.
Ohochuku, N. S. See also **Jibodu,** K. O., 2396.
Ohta, K. See **Albert,** A., 1540.
Ohtsuru, M. See **Takeda,** K., 2697.
Okorie, D. A., and **Taylor,** D. A. H. Limonoids from *Xylocarpus granatum* Koenig, 211.
Okorie, D. A. See also **Adesogan,** E. K., 205.
Okomura, T. See **Nagata,** W., 2347, 2355, 2365.
Oldham, P. H., and **Williams,** G. H. Homolytic reactions of perfluoroaromatic compounds. Part II. Reactions of perfluorobenzoyl peroxide with aromatic compounds, 1260.
Ollis, W. D., **Ormand,** K. L., **Redman,** B. T., **Roberts,** R. J., and **Sutherland,** I. O. The oxidative rearrangement of olefins by thallium(III) acetate. Part II. Synthesis of isoflavones, 125.
Ollis, W. D., **Ormand,** K. L., and **Sutherland,** I. O. The oxidative rearrangement of olefins by thallium(III) acetate. Part I. Oxidative rearrangement of chalcones, 119.
Ollis, W. D. See also **Baker,** W., 1219.
Olsson, N. A. See **Cremlyn,** R. J. W., 1889.
Organ, T. D. See **Hanson,** J. R., 513, 1065, 1182, 2111, 2473.
Orgias, E. F. See **Briggs,** L. H., 1885.
Ormand, K. L. See **Ollis,** W. D., 119, 125.
Overend, W. G. See **Gunner,** S. W., 1954.
Overton, K. H. See **Aberhart,** D. J., 1612, and **Brooks,** C. J. W., 203.
Owen, G. R., and **Reese,** C. B. A convenient preparation of tetrahydro-4*H*-pyran-4-one, 2401.
Owen, L. N., and **Sridhar,** R. Cytoxic compounds. Part X. Carbamates derived from *NN*-bis(2-chloroethyl)-*m*- and *NN*-bis-(2-chloroethyl)-*p*-phenylenediamine. Part XI. Enol carbamates derived from α-chloro-α-phenylacetophenone, 472, 564.
Owen, L. N. See also **Heap,** J. M., 707, 712.
Ozainne, M. See **Thomas,** A. F., 220.

P

Pai, B. R. See **Kametani,** T., 624.
Pain, D. L. See **Millard,** B. J., 2042.
Pakshong, J. M. See **Candy,** H. A., 2536.
Palan, P. R. See **Davies,** A. G., 2030.
Pande, S. G. See **Bacon,** R. G. R., 1967.
Paolillo, L. See **Lousberg,** R. J. J. C., 2154.
Parfitt, L. T. See **Claisse,** J. A., 258.
Park, J. See **Habib,** M. J. A., 2556.
Parke, D. V. See **Iveson,** P., 2038.
Parker, D. M. See **Crofts,** P. C., 332, 2342, 2529.
Parker, J. B. See **Currie,** A. C., 1104, and **Dinwoodie,** A. H., 1106, 1108.
Parkin, J. G. See **Brettle,** R., 1317.
Parrick, J. See **Clark,** B. A. J., 498, and **Kelly,** A. H., 303.
Parrott, M. J. See **Davies,** D. I., 659.
Partridge, M. W. See **Bloomfield,** D. G., 2647, and **Brunswick,** D. J., 2641.
Patai, S. See **Elmaleh,** D., 939.
Pattenden, G. Synthesis of asperenone [all-*trans*(*E*)-8-methyl-13-phenyltrideca-4,6,8,10,12-pentaen-3-one], a pigment of *Aspergillus* species of fungi, 1404.
Pattenden, G., **Way,** J. E., and **Weedon,** B. C. L. Carotenoids and related compounds. Pzart XXVI. Synthesis of methyl natural bixin, 235.
Pattenden, G. See also **Crombie,** L., 1076.
Pauson, P. L., **Kelly,** P. B., and **Porter,** R. J. Mannich condensations of tropolones, 1323.
Pauson, P. L., and **Todd,** K. H. Cycloheptatriene and tropylium metal complexes. Part VI. Tropone and alkoxycycloheptatriene complexes of tricarbonylchromium. Part VII. The preparation and ready ring contraction of tricarbonylcarbethoxytropyliumchromium. Part VIII. A study of directive effects in nucleophilic addition to substituted tricarbonyltropyliumchromiums, 2315, 2636, 2638.
Pauwels, P. J. S. See **Feeney,** J., 1842.
Pavlik, J. W. See **Filipescu,** N., 1851.
Payling, D. W. See **Johnstone,** R. A. W., 1238.
Peach, C. M. See **Kirk,** D. N., 1454.
Pegel, K. H. See **Candy,** H. A., 2536.
Pelc, B., and **Kodicek,** E. 1α-Hydroxycholesterol, 1624.
Perche, J.-C. See **Buu-Hoï,** N. P., 1327.
Percival, A. See **Binns,** F., 1134, 2063, **Chapman,** R. F., 1664, and **King,** J. A. G., 1418.
Percival, E. See **Bourne,** E. J., 1561.
Perkins, M. J. See **Flowerday,** P., 290, 298, and **Holman,** R. J., 2195.
Perold, G. W. See **Kruger,** P. E. J., 2127.
Peters, D. A. V. See **Fahey,** J. L., 719.
Peters, J. See **Currie,** A. C., 1104.
Pfleiderer, W. See **Mirza,** J., 437.
Philippides, D. See **Fleming,** I., 2426.
Phillips, D. See **McWatt,** I., 593.
Photaki, I. On cysteine and cystine peptides. Part VI. *S*-Acylcysteines in peptide synthesis, 2687.

Photaki, I., **Taylor-Papadimitriou,** J., **Sakarellos,** C., **Mazarakis,** P., and **Zervas,** L. On cysteine and cystine peptides. Part V. *S*-Trityl- and *S*-diphenylmethylcysteine and -cysteine peptides, 2683.
Piccardi, P., **Modena,** M., **Serboli,** G. C., and **Ragazzini,** M. Defluorination reactions by aluminium chloride and methyl iodide. Part I. Halogenofluoroethanes, 949.
Pinder, R. M. Synthesis of 3-(2-aminoethyl)-5-hydroxyindene, the indene isostere of 5-hydroxytryptamine, 114.
Pinhey, J. T. See **Shoppee,** C. W., 1443.
Pinkus, J. L., **Jessup,** H. A., and **Cohen,** T. Thermal rearrangement of 3-benzoyl-2,1-benzisoxazole to 2-phenyl-4*H*-3,1-benzoxazone in solution, 242.
Polya, J. B. See **Blackman,** A. J., 2403, **Browne,** E. J., 1515, and **Khan,** M. A., 85.
Popper, T. L., **Carlon,** F. E., and **Gnoj,** O. Pyrolysis of 17-oxygenated 16-methylene-20-oxosteroids. Part I. Formation of 2-methylandrostano[17,16-*c*]furans, 1344.
Popper, T. L., **Carlon,** F. E., **Gnoj,** O., and **Teutsch,** G. Pyrolysis of 17-oxygenated 16-methylene-20-oxosteroids. Part III. Preparation and pyrolysis of 17α-acetoxy-17β-methyl-16-methylene-17a-oxo-D-homoandrostanes, 1352.
Popper, T. L., and **Gnoj,** O. Pyrolysis of 17-oxygenated 16-methylene-20-oxosteroids. Part II. Oxidation cleavage of 2′-methylandrostano[17,16-*c*]furans, 1349.
Porter, A. E. A., and **Sammes,** P. G. On the synthesis of 3-benzylidenepiperazine-2,5-diones, 2530.
Porter, L. J., and **Markham,** K. R. The aluminium(III) complexes of hydroxy-flavones in absolute methanol. Part I. Ligands containing only one chelating site. Part II. Ligands containing more than one chelating site, 344, 1309.
Porter, R. J. See **Pauson,** P. L., 1323.
Poulton, G. A. See **Abramovitch,** R. A., 128.
Powell, V. H. See **Birch,** A. J., 1469.
Poyser, J. P. See **Barton,** D. H. R., 1584.
Prabhu, T. P. See **Gardner,** D. V., 2500.
Prakash, C. See **Garg,** H. C., 1056.
Prenton, G. W. See **Gibson,** M. S., 2234.
Preston, N. W. See **Lloyd,** D., 610.
Preston, P. N. See **Johnstone,** R. A. W., 1238.
Price, A. W. See **Bennett,** D. J., 1557.
Prior, A. M. See **Guthrie,** R. D., 1961.
Proctor, G. R. See **Gupta,** D. N., 2191, **McCall,** I., 1126, **Macdonald,** I., 1461, and **McWatt,** I., 593.
Prout, C. K. See **Bailey,** A. S., 956.
Punja, N. See **Kay,** I. T., 2409.
Purdie, L. See **McCall,** I., 1126.

Q

Qureshi, M. I. See **Carruthers,** W., 2238.

R

Rafla, F. K. See **El-Kholy,** I. E. S., 1578.
Ragazzini, M. See **Piccardi,** P., 949.
Rajagopalan, M. S., and **Turner,** A. B. Steroid conjugates. Part II. Synthesis of 5β-pregnane-3α-,20α-diol 20-monosulphate, 2266.
Ralph, J. T. See **Jaffari,** G. A., 2060.
Ramsay, B. G. See **Clayton,** J. P., 2089.
Rane, D. F. See **McMurry,** T. B. H., 2012.
Rappoport, Z. See **Elmaleh,** D., 939.
Rawson, G. See **Jordens,** P., 273.
Read, G., and **Ruiz,** V. M. Quinone epoxides. Part VI. The synthesis and stereochemistry of terremutin, 1945.
Readhead, M. J. See **Lewis,** J. W., 771.
Reary, J. B. See **Lewis,** J. R., 1662.
Redman, B. T. See **Ollis,** W. D., 125.
Rees, C. W., and **West,** D. E. Reactive intermediates. Part XI. The generation and some reactions of benzynequinone, 583.
Rees, C. W. See also **Anderson,** D. J., 576.
Reese, C. B. See **Khwaja,** T. A., 2092, and **Owen,** G. R., 2401.
Reeves, N. See **Feast,** W. J., 2429.
Reid, D. H. See **Dingwall,** J. G., 2412, and **McKenzie,** S., 145.
Reid, S. T. See **Coombes,** G. E. A., 325, and **Harvey,** D. J., 2074.
Renson, M. See **Buu-Hoï,** N. P., 1058.
Richards, E. E. See **Bridgeman,** J. E., 250.
Richards, E. M., and **Tebby,** J. C. Pentaco-ordinate phosphoranes. Olefinic and heteroaromatic dibiphenylylenephosphoranes, 1425.
Richardson, A. C. See **Birch,** G., 749, and **Horner,** M. W., 1336.
Richardson, K. See **Grigg,** R., 1289.
Ridley, A. B. See **Lack,** R. E., 1437.
Rigby, W. See **Hunt,** B. J., 2459.
Risaliti, A. See **Colonna,** F. P., 2377.
Ritchie, J. P. See **Ballantine,** J. D., 736.
Rivett, D. E. A. See **Kaplan,** E. R., 1656.
Roberts, D. W. See **Banks,** R. E., 2531.
Roberts, J. C., and **Woollven,** P. Studies in mycological chemistry. Part XXIV. Synthesis of ochratoxin A, a metabolite of *Aspergillus ochraceus* Wilh., 278.
Roberts, J. C. See also **Bycroft,** B. W., 281.
Roberts, R. J. See **Ollis,** W. D., 125.
Roberts, S. M. See **Binns,** F., 1375.
Robins, D. J., and **Crout,** D. H. G. Pyrrolizidine alkaloids. The absolute configuration at C-2 in monocrotalic acid, 1334.
Robinson, B., and **Moorcroft,** D. Alkaloids of *Physostigma venenosum*. Part IX. The absolute configuration of geneserine; an application of the nuclear Overhauser effect, 2077.
Robinson, G. E., and **Vernon,** J. M. Photochemical phenylation and oxidation of halogen-substituted diphenylmethanes in benzene, 2586.
Robson, N. C. See **Binns,** F., 1128, 1134, 2063, and **King,** J. A. G., 1418.
Roche, M. See **Grigg,** R., 1928.
Rogers, D. See **Neidle,** S., 2340.
Rogers, G. T., and **Ulbricht,** T. L. V. Transfer RNA components. Part I. Direct synthesis of nucleosides of cytosine and 2-thiocytosine, 1109.
Roller, P., and **Djerassi,** C. Terpenoids. Part LXVI. Simultaneous functionalization of the angular 10- and 13-methyl groups in 11β-hydroxylanostan-3β-yl acetate by oxidation with lead tetra-acetate–iodine, 1089.
Rooney, J. J. See **Gray,** G. A., 1788.
Roux, D. G. See **du Preez,** I. C., 1800.
Rowell, F. J. See **Kirk,** D. N., 1498.
Rubin, M. B., **Blossey,** E. C., **Brown,** A. P., and **Vaux,** J. E. jun. Conformational effects in 20-oxosteroids, 57.
Ruiz, V. M. See **Read,** G., 1945.

Rushworth, W. I. See **Lewis,** J. W., 560.
Russell, R. See **Haynes,** L. J., 2581.
Russell, R. C. See **Baker,** W., 1219.
Russo, C. See **Colonna,** F. P., 2377.
Ruwet, A. See **Buu-Hoï,** N. P., 1058.

S

Safe, S., and **Taylor,** A. Sporidesmins. Part X. Synthesis of polysulphides by reaction of dihydrogen disulphide with disulphides and thiols, 432.
Safe, S. See also **Chin,** C., 314.
Sainsbury, M., **Dyke,** S. F., and **Moon,** B. J. 1,2-Dihydroisoquinolines. Part XIII. Synthesis of sanguinarine chloride, 1797.
Saint-Ruf, G. See **Buu-Hoï,** N. P., 1327.
Sakarellos, C. See **Photaki,** I., 2683.
Sakla, A. B., **Tadros,** W., and **Khaliel,** M. K. Reactions with asymmetric diarylethanes and diarylethylenes. Part XIII. Rearrangements of 1,1-dihalogeno-2,2-diarylethanes and the corresponding 1-halogenoethylenes in boiling ethylene glycol, alone or in the presence of sodium 2-hydroxyethoxide, 409.
Sakla, A. B. See also **Tadros,** W., 1923.
Salemink, C. A. See **Lousberg,** R. J. J. C., 2152, 2154, 2159.
Salisbury, K. See **Heller,** H. G., 399, 873, 1997.
Saltmarsh, M. S. See **Diggle,** J. M., 2325.
Sammes, P. G. See **Barton,** D. H. R., 1584, 1977, **Blake,** K. W., 980, 1070, and **Porter,** A. E. A., 2530.
Sanderson, G. R. See **Aspinall,** G. O., 2256, 2259.
Sargent, M. V., and **Smith,** D. O'N. Syntheses of 2,4-dihydroxy- and 1,3-dihydroxy-8-methylphenanathrene-9,10-quinones and their bearing on the structure of denticulatol, 329.
Sargent, M. V., **Smith,** D.O'N., and **Elix,** J. A. The minor anthraquinones of *Xanthoria parietina* (L.) Beltram, the chlorination of parietin, and the synthesis of fraglin and 7-chloroemodin (' AO-1 '), 307.
Sarrag, S. A. See **Iskander,** G. N., 1701.
Sasaki, T., **Kanematsu,** K., and **Yukimoto,** Y. The chemistry of cyanoacetylenes. Part V. 1,3-Dipolar cycloaddition reactions of cyanoacetylenes with *N*-ylides and *N*-imines, 481.
Sasaki, T., and **Kojima,** A. Chemistry of cyanoacetylenes. Part IV. Preparation and reactions of cyano-ynamines and the corresponding cyano-enamines, 476.
Satoh, F. See **Kametani,** T., 382.
Sauer, G., **Shimaoka,** A., and **Takeda,** K. Components of *Chionographis japonica* Maxim. Part IV. Structures of chiograsterone and isochiograsterone, two new sterols from *Chionographis japonica* Maxim., 910.
Saunders, A., and **Sprake,** J. M. Ring-substituted derivatives of 5,6,11,12-tetrahydrodibenzo[*b*,*f*][1,4]diazocine, 1161.
Šavrda, J., and **Veyrat,** D. H. A stable reagent for the preparation of *N*-*o*-nitrophenylthio-amino-acids, 2180.
Scanlon, B. See **Clarke,** T. G., 815.
Schmidt, H.-L. See **Halmann,** M., 1191.
Schmutzler, R. See **Brown,** C., 878.
Schöbel, G. See **Sipos,** G., 1154.
Schofield, K. See **Choudhury,** A. M., 2543.
Schweizer, E. E., and **Wehman,** A. T. Reactions of phosphorus compounds. Part XXII. A reinvestigation of the reactions of activated alkynes with triphenylphosphine hydrobromide. An investigation of the reactions with bases of the vinylphosphonium salts prepared, 1901.
Scopes, P. M. See **Chaudri,** B. A., 1329, **Green,** N. M., 1330, and **Mose,** W. P., 2417.
Scott, F. L., and **Caskell,** P. A. Synthesis of azine perhalide adducts, 2674.
Scott, F. L. See also **Aylward,** J. B., 968, and **Butler,** R. N., 2510.
Scott, R. D. See **Butler,** R. N., 2510.
Scotton, M. See **Adembri,** G., 1536.
Scrowston, R. M. See **Chapman,** N. B., 2269, 2431, **Clarke,** K., 1013, and **Cooper,** J., 1949.
Searby, R. See **Mullock,** E. B., 829.
Sears, D. J. See **Marshall,** R., 2144.
Seddon, D. See **Brettle,** R., 1153, 1317, 1320, 2175.
Sepulchre, A. M. See **Cleophax,** J., 1385.
Serboli, G. C. See **Piccardi,** P., 949.
Shaban, A. M. See **Gindy,** M., 1905.
Shaban, M. A. E. See **El Khadem,** H., 2167.
Shadbolt, R. S. *cis*- and *trans*-2-Substituted 1-methylindanes, 920.
Shah, M. A., and **Taylor,** G. A. Keten. Part VIII. The adducts of dimethylketen with substituted cinnolines. Part IX. The reaction of dimethylketen with some benzodiazines, 1642, 1651.
Shah, P. K. J. See **Dewhurst,** F., 1737.
Shannon, P. V. R. See **Byrne,** E., 1637, **Carson,** M. S., 1447, and **Donnelly,** W. J. G., 524.
Sharma, K. S. See **Chapr** ٦, N. B., 2334.
Sharma, S. C. See **Armarego,** W. L. F., 1600.
Shaw, G., and **Smallwood,** B. M. Purines, pyrimidines, and imidazoles. Part XXXIV. Synthesis and some reactions of *N*(6)-(formylmethyl)adenine, 2206.
Shaw, G. See also **Banks,** R. E., 55, and **Carpenter,** J. M., 2016.
Shaw, M. A., and **Tebby,** J. C. Reactions of phosphines with acetylenes. Part IX. 1,2-Alkylidenediphosphoranes stabilised by acyl and ester groups, 5.
Shaw, M. A., **Tebby,** J. C., **Ward,** R. S., and **Williams,** D. H. Reactions of phosphines with acetylenes. Part XI. Formation of derivatives of 5*H*-diphosph(v)ole and 1,4-diphosph(v)orin, 504.
Shaw, P. M. See **Kirk,** D. N., 182.
Shibuya, M. See **Fujita,** E., 1674.
Shibuya, S. See **Kametani,** T., 2213.
Shimaoka, A. See **Sauer,** G., 910.
Shingu, T. See **Fujita,** E., 1674.
Shoppee, C. W., and **Coll,** J. C. Steroids and Walden inversion. Part LXVII. Substitution reactions of the 19-nor-5α-cholestan-2-ols, Part LXVIII. A re-examination of the substitution reactions of the 5α-cholestan-3-ols, 1121, 1124.
Shoppee, C. W., **Coll,** J. C., and **Lack,** R. E. Steroids. Part XXXV. Preparation of the epimeric 2-hydroxy-19-nor-5α-cholestanes, 1893.
Shoppee, C. W., **Hughes,** N. W., **Lack,** R. E., and **Pinhey,** J. T. Steroids. Part XXXVI. Removal of the 4-methyl groups in 4,4,14α-trimethyl-steroids: conversion of lanosterol into 14α-methylcholest-4-en-3-one, 1443.
Shoppee, C. W., **Hughes,** N. W., and **Newman,** B. C. Steroids. Part XXXIV. 17β-Hydroxy-5β,14α,17α-pregnan-20-one and related compounds, 558.
Shoppee, C. W., and **Killick,** R. W. Steroids. Part XXXVI. Some 13,17-secoandrostanes, 1513.

Shutt, J. R. See **Corfield,** J. R., 1855.
Sim, G. A. See **Hanson,** J. R., 2111.
Singh, A., **Singh,** H., **Dewan,** C. K., and **Narang,** K. S. Studies on bisthiazolo[3,2-*a*:4′,5′-*d*]pyrimidine derivatives. Part II, 1114.
Singh, H. See **Singh,** A., 1114.
Singh, P. P. See **Garg,** H. G., 656.
Sinsheimer, J. E. See **Subba Rao,** G., 1823.
Sipos, G., **Schöbel,** G., and **Baláspiri,** L. The Darzens condensation. Part I. Effect of substituents on the acid-catalysed Darzens condensation, 1154.
Škarič, V., **Gašpert,** B., and **Hohnjec,** M. Thio-analogues of 5,6-dihydrouridine, 2444.
Skrowrońska, A. See **Michalski,** J., 703.
Sledge, M. J. See **Andrews,** A. T. de B., 1052.
Smalley, R. K. See **Eatough,** J. J., 1874.
Smallwood, B. M. See **Shaw,** G., 2206.
Smith, A., and **Utley,** J. H. P. Configurational isomers of 3-substituted *cis*-hexahydrocarbazoles, 1.
Smith, C. W. See **Cleophax,** J., 1385, and **Gero,** S. D., 1402.
Smith, D. M. See **Cadogan,** J. I. G., 2441, and **Marshall,** R., 2144.
Smith, D. O'N. See **Sargent,** M. V., 307, 329.
Smith, L. See **Brady,** W. T., 2522.
Smith, M. J. See **Grigg,** R., 1289.
Smith, P. J. See **Worden,** L. R., 227.
Smith, R. G. See **Bender,** C. O., 1251.
Snatzke, G. See **Brienne,** M. J., 423.
Snell, B. K. See **Gray,** E. A., 986.
Snodin, D. J. See **Chalkley,** G. R., 682.
Soloway, S. B. See **Kirby,** P., 2250.
Southgate, R. See **Clayton,** J. P., 2089.
Southon, I. W. See **Clark,** J., 494.
Spagnolo, P. See **De Luca,** G., 2504, and **Leardini,** R., 1464.
Spangle, L. A. See **Cooper,** R. D. G., 340.
Speight, J. G. See **Birchall,** J. M., 2187.
Sprake, J. M. See **Saunders,** A., 1161.
Sridhar, R. See **Owen,** L. N., 472, 564.
Stangroom, R. D. See **Archer,** D. A., 2276.
Stansfield, F. See **Iskander,** G. N., 1701.
Stead, C. V. Self-coupling of diazotised 1-amino-8-hydroxynaphthalene-3,6-disulphonic acid, 693.
Steer, R. J., **Watkins,** S. F., and **Woodward,** P. Crystal and molecular structure of hexaiodobenzene, 403.
Stelakatos, G. C., and **Argyropoulos,** N. Amino-acid 4-methoxybenzyl esters, 964.
Stephenson, L., and **Warburton,** W. K. Synthesis of some substituted α-carbolines, 1355.
Sternhell, S. See **Brophy,** G. C., 933.
Stevens, G. See **Chalkley,** G. R., 682.
Stevens, H. N. E., and **Stevens,** M. F. G. Triazines and related products. Part III. Synthesis and rearrangement of 3,4-dihydro-4-imino-1,2,3-benzotriazines, Part IV. Methylation of 3-aryl-3,4-dihydro-4-imino-1,2,3-benzotriazines. Part V. The structure of some red *N*-alkyl-1,2,3-benzotriazines, Part VII. Reductive fission of 1,2,3-benzotriazines with hydrazine and Raney nickel, 765, 2284, 2289, 2308.
Stevens, H. N. E. See also **Johnstone,** R. A. W., 1238.
Stevens, M. F. G. See **Johnstone,** R. A. W., 1238, **Mackenzie,** S. M., 2298, and **Stevens,** H. N. E., 765, 2284, 2289, 2308.
Stevens, T. S. See **Bentley,** R., 791, **Hayes,** B. T., 1088, and **Johnson,** R. S., 796.
Stewart, A. P., and **Trippett,** S. Some reactions of chloro(di-t-butyl)phosphine and of phenyl di-t-butyl phosphinite, 1263.
Stewart, J. C. M. See **Khwaja,** T. A., 2092.
Stollar, H. See **Liston,** A. J., 2121, and **Morand,** P., 2117.
Stoodley, R. J. See **Clayton,** J. P., 2089.
Stuart, A. See **Mirza,** J., 437.
Stuart, K. L., **Byfield,** D., **Chambers,** C., and **Husbands,** G. E. M. Alkaloids from *Croton* species. Part X. Two new reduced proaporphine alkaloids, 1228.
Subba Rao, G., and **Sinsheimer,** J. E. Constituents from *Gymnema sylvestre* leaves. Part VII. 3β,23:16β,28-Di-*O*-isopropylidene derivative of gymnemagenin, 1823.
Subrahmanyan, G. See **Kasturi,** T. R., 1257.
Sughara, T. See **Kametani,** T., 624.
Sugden, J. K. Ester exchange in ethyl *N*-substituted-4-hydroxy-5-oxo-3-pyrroline-3-carboxylates, 715.
Sugi, H. See **Kametani,** T., 2213.
Sugimoto, T. See **Biffin,** M. E. C., 139, and **Brown,** D. J., 2661.
Sugiyama, N. See **Kashima,** C., 111.
Summers, B. See **Davies,** D. I., 2653.
Summers, L. A. See **Black,** A. L., 2394.
Supanekar, V. R. See **Crawford,** M., 1832.
Suschitzky, H. See **Ager,** E., 193, 1530, **Binns,** F., 1375, **Collins,** I., 1523, **Garner,** R., 825, and **Mullock,** E. B., 829.
Sutherland, I. O. See **Ollis,** W. D., 119, 125.
Swan, G. A., and **Waggott,** A. Studies related to the chemistry of melanins. Part VI. Syntheses of 3-carboxypyrrole-2-acetic acid, 3-5-dicarboxypyrrole-2-acetic acid, and related compounds. Part X. Quantitative assessment of different types of units present in dopa-melanin, 285, 1409.
Swan, G. A. See also **Binns,** F., 1128, 1134, 2063, **Chapman,** R. F., 865, 1664, and **King,** J. A. G., 1418.
Sword, I. P. Reactions of some benzylidene compounds with potassium cyanide, 1916.
Sykes, P. J. See **Ballantine,** J. D., 731, 736.
Symon, J. D. See **Dingwall,** J. G., 2412.
Szarek, W. A. See **Howarth,** G. B., 2218.
Szinai, S. S. See **Chakrabarti,** J. K., 1303.

T

Tadros, W., **Sakla,** A. B., **Gindy,** M., and **Fouad,** N. Reactions with asymmetric diarylethylenes and diarylethanes. Part XIV. Addition of xanthenyl chloride to the ethylenes, 1923.
Tadros, W. See also **Sakla,** A. B., 409.
Takeda, K., **Horibe,** I., and **Minato,** H. Cope rearrangement of some germacrane-type furan sesquiterpenes. Part I. Part III. Rearrangement of *cis,trans*-cyclodeca-1,5-diene derivatives, 1142, 2704.
Sesquiterpenes of *Lauraceae* plants. Part II. Neosericenine, a component of the leaf of *Neolitsea sericea* Koidz., 1547.
Takeda, K., **Horibe,** I., **Teraoka,** M., and **Minato,** H. Sesquiterpenes of *Lauraceae* plants. Part I. Components of *Neolitsea aciculata* Koidz., 973.
Takeda, K., **Tori,** K., **Horibe,** I., **Minato,** H., **Hayashi,** N., **Hayashi,** S., znd **Matsuura,** T. Structure of sericenine, 985.

Takeda, K., **Tori,** K., **Horibe,** I., **Ohtsuru,** M., and **Minato,** H. Cope rearrangement of some germacrane-type furan sesquiterpenes. Part II. Relationship between conformations of carbocyclic ten-membered rings in germacrane-type furan sesquiterpenes and the stereochemistry of their Cope rearrangement products, 2697.
Takeda, K. See also **Funke,** E., 2548, and **Sauer,** G., 910.
Talwar, S. S. See **Wilcox,** C. F. jun., 2162.
Tam, J. N. S. See **Chow,** Y. L., 1138.
Tannenbaum, H. P. See **Kingston,** D. G. I., 2574.
Tannock, J. See **Harper,** S. H., 626.
Tatlow, J. C. See **Burdon,** J., 2146.
Tattersall, J., and **Taylor,** J. B. Novel heterocyclic spirobenzofurans, 931.
Taylor, A. See **Safe,** S., 432.
Taylor, D. A. H. Limonoids from *Khaya madagascariensis* Jumelle et Perrier, 336.
Taylor, D. A. H. See also **Adesogan,** E. K., 205, 1710, **Jibodu,** K. O., 2396, **Ohochuku,** N. S., 421, and **Okorie,** D. A., 211.
Taylor, D. R. See **Chan,** W. R., 311.
Taylor, G. A. See **Shah,** M. A., 1642, 1651.
Taylor, I. C. See **Hewertson,** W., 1835, 1990.
Taylor, J. B. See **Tattersall,** J., 931.
Taylor, M. V. See **Barton,** D. H. R., 1977.
Taylor, W. G. See **Kingston,** D. G. I., 2574.
Taylor-Papadimitriou, J. See **Photaki,** I., 2683.
Tebby, J. C. See **Richards,** E. M., 1425, **Shaw,** M. A., 5, 504, and **Waite,** N. E., 386.
Teraoka, M. See **Takeda,** K., 973.
Teutsch, G. See **Popper,** T. L., 1352.
Thaller, V. See **Chin,** C., 314.
Thomas, A. F., and **Ozainne,** M. Addition of a functionalized isoprene unit to an allyl alcohol. Part II. Reaction with furylmethanol and thienylmethanol and synthesis of torreyal and dendrolasin, 220.
Thomas, C. B. See **Bingham,** A. J., 1879.
Thomas, G. J. See **Hassall,** C. H., 636.
Thompson, M. See **Bentley,** R., 791.
Thompson, R. H. See **Forrester,** A. R., 1081.
Thompson, T. W. See **Longridge,** J. L., 1658.
Thomson, C. See **Cadogan,** J. I. G., 2437.
Thomson, J. B. See **Connolly,** J. P., 508.
Thomson, R. H. See **Brown,** P. M., 109.
Thorén, S. See **Bartlett,** L., 2678.
Thorpe, D. See **Meth-Cohn,** O., 132.
Thoseby, M. R. See **Baxter,** I., 850.
Tiecco, M. See **De Luca,** G., 2504, and **Leardini,** R., 1464.
Timmis, G. M. See **Lister,** J. H., 1313.
Timmons, C. J. See **Blackburn,** E. V., 163, 172, 175.
Tinkler, R. B. See **Lawson,** A., 1429.
Tipping, A. E. See **Gregory,** R., 1750, and **Haszeldine,** R. N., 414.
Titman, R. B. See **Baxter,** I., 2078.
Todd, A. See **Chakrabarti,** J. K., 1303.
Todd, K. H. See **Pauson,** P. L., 2315, 2636, 2638.
Todd, M. J. See **Cadogan,** J. I. G., 2437, 2441.
Todesco, P. E. See **Di Nunno,** L., 1433.
Toft, P. See **Liston,** A. J., 2121.
Tori, K. See **Takeda,** K., 985, 2697.
Toube, T. P. See **Hora,** J., 241, and **Moss,** G. P., 694.
Town, W. G. See **Crowe,** J. E., 990.
Tozyo, T. See **Funke,** E., 2548.
Tramontini, M. See **Andreani,** F., 1157, and **Andrisano,** R., 1866.
Trask, E. G. See **Johnson,** B. J., 2247.
Trippett, S. See **Corfield,** J. R., 1855, **Hewertson,** W., 1835, and **Stewart,** A. P., 1263.
Trompen, W. P. See **Geevers,** J., 875.
Tucker, M. J. See **Bishop,** D. C., 2184.
Tucker, N. I. See **Banks,** R. E., 2531.
Tully, W. R. See **Acheson,** R. M., 1117.
Turnbull, K. W. See **Banthorpe,** D. V., 2689.
Turner, A. B. See **Rajagopalan,** M. S., 2266.
Turner, J. L. See **Cremlyn,** R. J. W., 2629.
Turner, W. B. See **Aldridge,** D. C., 686, 2598.
Twitchett, H. J. See **Meth-Cohn,** O., 132.

U

Ullbricht, T. L. V. See **Rogers,** G. T., 1109.
Umezawa, B., **Hoshino,** O., **Hara,** H., and **Mitsubayashi,** S. Chemistry of cyclotriveratrylene (10,15-dihydro-2,3,7,8,-12,13-hexamethoxy-5*H*-tribenzo[*a*,*d*,*g*]cyclonene). Part II. Bromination, 465.
Urasaki, I. See **Ogata,** Y., 1689.
Urbanski T. See **Kolinski,** R. A., 1004.
Utley, J. H. P. See **Smith,** A., 1.

V

Van Binst, G., and **Nouls,** J. C. Synthesis of 1,2,4,6,7,11b-hexahydrobenzo[*a*]quinolizin-3-one and of some related compounds, 150.
Vanstone, A. E. See **Crispin,** D. J., 10.
Vaughan, K. See **Murray,** A. W., 2070.
Vaux, J. E. jun. See **Rubin,** M. B., 57.
Vernon, J. M. See **Robinson,** G. E., 2586.
Veyrat, D. H. See **Šavrda,** J., 2180.
Viehe, H. G. See **Halleux,** A., 881.
Vipond, H. J. See **Bloomfield,** D. G., 2647, and **Brunswick,** D. J., 2641.
Vipond, P. W. See **Hogg,** D. R., 60, 2142.
Vollhardt, K. P. C. See **Garratt,** P. J., 2137.
Votický, Z. See **Nakano,** T., 590.

W

Wade, R. See **Abramson,** F. B., 1042.
Waggott, A. See **Binns,** F., 1128, 2063, and **Swan,** G. A., 285, 1409.
Waite, D. Reductive amination of substituted indole-2,3-diones, 550.
Waite, N. E., and **Tebby,** J. C. Reactions of phosphines with acetylenes. Part X. Structure revision of a so-called spirobiphosphole. The rearrangement of a tricycloallylidenephosphorane to a phosph(III)onin, 386.
Wakefield, B. J., and **Wright,** D. J. Polyhalogenoaromatic compounds. Part XII. Synthesis and cycloaddition reactions of pentafluoro- and pentachloro-benzonitrile *N*-oxide, 1165.
Walczak, E. See **Gero,** S. D., 1402.
Wall, D. K. See **Hodson,** D., 971.
Wall, E. N., and **McKenna,** J. Cyclisation of unsaturated bases derived by Hofmann degradation of perhydroazepines: a convenient synthesis of aza-steroids from steroidal ketoximes, 188.

Wallis, S. R. See **Bartlett,** L., 2678, **Brienne,** M. J., 423, **Duck,** E. W., 2000, and **Kirk,** D. N., 350.
Walser, R. See **Crocker,** H. P., 1982.
Walshaw, M. V. See **Cotterill,** W. D., 1758.
Walthew, J. M. See **Gibson,** M. S., 2234.
Wälti, M. See **Hope,** D. B., 270, 2475.
Walton, D. R. M. See **Bartlett,** E. H., 1717, and **Bassindale,** A. R., 1577.
Warburton, W. K. See **Stephenson,** L., 1355.
Ward, M. P. See **Fitton,** A. O., 1553.
Ward, R. S. See **Choudhury,** A. M., 2543, and **Shaw,** M. A., 504.
Ward, T. J. See **Brewer,** J. P. N., 2569.
Warr, W. A. See **Bailey,** A. S., 956.
Waters, T. N. See **Clark,** G. R., 887.
Watkins, S. F. See **Steer,** R. J., 403.
Watson, D. G. See **Allen,** D. W., 810.
Watson, K. M. See **Fahey,** J. L., 719.
Watts, W. E. See **Habib,** M. J. A., 2552, 2556.
Way, J. E. See **Pattenden,** G., 235.
Webb, S. B. See **Kirby,** P., 2250.
Webster, B. R. See **Hill,** R., 2462.
Webster, G. R. B. See **Cross,** B. E., 930, 1839.
Weedon, B. C. L. See **Hora,** J., 241, and **Pattenden,** G., 235.
Wehman, A. T. See **Schweizer,** E. E., 1901.
Weiss, U. See **Lousberg,** R. J. J. C., 2152, 2154, 2159.
Werstiuk, E. See **Barton,** D. H. R., 1977.
West, D. E. See **McOmie,** J. F. W., 1084, and **Rees,** C. W., 583.
West, P. J. See **Clark,** B. A. J., 498.
Westwood, J. H. See **Brimacombe,** J. S., 1632.
Westwood, R. See **Cooper,** J., 1949.
Westwood, W. T. See **Burdon,** J., 1271.
White, A. F. See **Evans,** R., 2601.
White, D. N. J. See **Hanson,** J. R., 2111.
White, T. M. See **Marr,** G., 1789.
Whitehurst, J. S. See **Crispin,** D. J., 10.
Whiting, M. C. See **Alder,** R. W., 1693, and **Chalkley,** G. R., 682.
Widdowson, D. A. See **Barton,** D. H. R., 775, 1208, 1213.
Widiger, G. N. See **Worden,** L. R., 227.
Wilcox, C. F. jun., and **Talwar,** S. S. Two syntheses of dibenzo[*b*,*h*]biphenylene, 2162.
Wilke, R. N. See **Hellberg,** L. H., 35.
Wilkinson, M. See **Kurzer,** F., 19, 26.
Williams, C. S. See **Chapman,** P. H., 1183.
Williams, D. H. See **Shaw,** M. A., 504.
Williams, G. H. See **Oldham,** P. H., 1260.
Williams, N. See **Inch,** T. D., 263.
Williams, N. R. See **Gunner,** S. W., 1954.
Williamson, W. R. N. See **Bowman,** R. E., 94, 101.
Wilson, D. A. See **Kerr,** D. A., 1718.
Wilson, M. A. See **Kirk,** D. N., 1454.
Winkley, M. W. Pyrimidine nucleosides. Part IV. Reactions of 3-(β-D-ribofuranosyl)uracils. Part V. Reactions of 3-(β-D-ribofuranosyl)uracils and related compounds, 1365, 1869.
Wojtowski, R. K. See **Farrell,** P. G., 1390, 1394.
Wood, H. C. S. See **Mirza,** J., 437.
Wood, N. F. See **Fields,** R., 744, 1370.
Woodgate, P. D. See **Bridgeman,** J. E., 244, 250, and **Burkinshaw,** G. F., 1607.
Woods, H. J. See **Ledwith,** A., 1422.
Woodward, P. See **Steer,** R. J., 403.
Woollven, P. See **Roberts,** J. C., 278.
Worden, L. R., **Kaufman,** K. D., **Smith,** P. J., and **Widiger,** G. N. Synthesis of 4,6-dihydroxyisophthalaldehyde and the 5-methyl and 5-methoxy-derivatives, 227.
Wragg, W. R. See **Lunt,** E., 1845.
Wright, D. J. See **Wakefield,** B. J., 1165.
Wright, J. L. C. See **Ballantine,** J. A., 1175.
Wright, P. H. See **Boyd,** G. V., 1485, and **Candy,** C. F., 2563.
Wriglesworth, M. J. See **Cotterrell,** G. P., 739, 1503.
Wynberg, H. See **Jordens,** P., 273.
Wyse, K. J. See **Jones,** D. N., 2027.

Y

Yagi, H. See **Kametani,** T., 382, 624, 2213.
Yamamoto, M. See **Kashima,** C., 111.
Yamanaka, T. See **Kametani,** T., 380.
Yee, T. See **Chan,** W. R., 311.
Yoshioka, M. See **Nagata,** W., 2347, 2355, 2365.
Yost, Y., and **Gutmann,** H. R. Hindered *N*-arylhydroxamic acids from arylamines *via* nitroso-compounds, 2497.
Young, P. R. See **Mackenzie,** K., 1242.
Yukimoto, Y. See **Sasaki,** T., 481.

Z

Zanlungo, A. B., **Deferrari,** J. O., and **Cadenas,** R. A. The reaction of ammonia with acylated disaccharides. Part IX. Acetyl derivatives of melibiose, 1908.
Zervas, L. See **Photaki,** I., 2683.
Zetta, L. See **Ferruti,** P., 2512.
Ziemek, P. See **Nishinaga,** A., 2613.

INDEX OF SUBJECTS, 1970

A

Acacia cultriformis, novel flavan-3,4-diols from, 1800.

Acanthoscelides obtectus (Say), the male dried bean beetle, an allenic ester, (−)methyl n-tetradeca-*trans*-2,4,5-trienoate, produced by, 859.

Acenaphthenes. Iodination of acenaphthene and fluorene with iodine-peracetic acid, 1689.

The nuclear halogenation of fluorene, fluorenone, acenaphthene, and acenaphthenequinone by *N*-bromosuccinimide and *N*-chlorosuccinimide, 1737.

Acenaphtho[5,6-*bc*]pyridine, 1-methyl-. *peri*-Naphthotriazines and related compounds. Part III, some photochemical reactions: synthesis of 1-methylacenaphtho-[5,6-*bc*]pyridine, 298.

Acenaphthylene and cyclopentadiene, reaction between, and spectral properties of the adducts and derived alcohols and ketones. Rigid polycyclic systems, 596.

derivatives, some; their preparation and properties. *peri*-Naphthotriazines and related compounds. Part II, 290.

Acetamides, amino-, by treatment of 1,1,2,2-tetra-aminoethanes with water, 2512.

Polyfluorocyclopentadienes. Part V, reaction of perfluorocyclopentadiene with *N*-allyltrifluoroacetamide, 201.

Acetophenone, α-chloro-α-phenyl-, enol carbamates derived from. Cytotoxic compounds. Part XI, 564.

Acetylenes—*see also* Arynes.

light-induced reactions of formamide with, 893.

natural. Part XXXI, C_{14}-tetrahydropyranyl and other polyacetylenes from the Compositae *Dahlia coccinea* Cav. Var. coccinea, 314.

reactions of phosphines with. Part IX, 1,2-alkylidenediphosphoranes stabilised by acyl and ester groups, 5. Part X, structure revision of a so-called spirobiphosphole. The rearrangement of tricycloallylidenephosphorane to a phosph(III)onin, 386. Part XI, formation of derivatives of 5*H*-diphosph(v)ole and 1,4-diphosph(v)orin, 504.

Chemistry of cyanoacetylenes. Part IV, preparation and reactions of cyanoynamines and the corresponding cyanoenamines, 476. Part V, 1,3-dipolar cycloaddition reactions of cyanoacetylenes with *N*-ylides and *N*-imines, 481.

Reactions of phosphorus compounds. Part XXII, a reinvestigation of the reactions of activated alkynes with triphenylphosphine hydrobromide. An investigation of the reactions with bases of the vinylphosphonium salts prepared, 1901.

Reactivity of vinyl sulphonic esters. Part I, addition of *O*-sulphenyl arenesulphonates to acetylene derivatives, 2617.

Studies in azide chemistry. Part III, polyfluorinated azides from 1*H*- and 2*H*-pentafluoropropene and perfluorobut-2-yne, 2172.

The condensation of acetylenic esters with ethyl phenylacetates, 2056.

The stereochemistry of the reaction of Grignard and lithium reagents with phenyl- and methyl-propiolic acids, 1380.

The synthesis and rearrangement of alk-2-ynylphosphines, 1835.

Trihalogenomethyl compounds of potential therapeutic interest. Part VIII, synthesis of some epoxides, amides, alcohols, and acetylenic amines, 94.

Acids, 4,4-disubstituted 3-alkoxycarbonylbut-3-enoic, the conversion of, into benzo[*c*]fluorenone derivatives. Benzo[*c*]fluorenones. Part III, 1905.

pyridinecarboxylic, oxidative effects of silver(II) complexes of. Metal ions and complexes in organic reactions. Part XIII, 1975.

sulphinic. Reduction of benzyl sulphonyl (sulphone) intermediates to sulphinic acids. Synthesis of hypotaurine and of L-cysteine and L-homocysteine sulphinic acids, 270.

α-Amino-sulphonic acid derivatives. Part II, synthesis and ring closure of some iodomethylsulphonyl-benzamidines and -guanidines, 1429.

An abnormal Schmidt reaction: 4,5-dihydro-1*H*-1-benzazepin-2(3*H*)-one from γ-phenylbutyric acid, 2058.

Aroyl- and arylsulphonyl-sulphamic acids, 515.

Benzopyrones. Part II, 7-hydroxy-4-oxochromen-2-carboxylic acid and some of its derivatives, 2609.

Hydrocyanation. Part VIII, conjugate hydrocyanation of steroidal αβ-unsaturated carboxylic acid derivatives, 2347.

Pharmacologically active 4-oxo-4*H*-chromen-2-carboxylic acids (2-carboxychromones). Part I, the synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused thiazole ring, 1553. Part II, the synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused imidazole or oxazole ring, 2518.

Quinazoline analogues of folic acid, 997.

Studies related to the chemistry of melanins. Part VI, syntheses of 3-carboxypyrrole-2-acetic acid, 3,5-dicarboxypyrrole-2-acetic acid, and related compounds, 285.

Synthetic uses of polyphosphoric acid and its ethyl ester. Part II, synthesis of indolin-2(3*H*)-ones and imidazoquinolines, 829.

The chemistry of triterpenes and related compounds. Part XLVII, clarification of the nature of the tetracyclic triterpene acids of elemi resin, 739.

The preparation and chemical properties of some glucuronyl esters of β-glycyrrhetic acid (3β-hydroxy-11-oxo-olean-12-en-30-oic acid) and its derivatives, 2038.

Acridan derivative, the phenol dyestuff of Liebermann as, 2462.

Acryloyl chloride, reaction with dienamines. Enamine chemistry. Part VIII, 1477.

Acylation, homolytic, of quinoxaline. Nucleophilic character of acyl radicals, 929.
of enamines with phosgene and the synthesis of heterocycles, 881.
of metal chelates. Part V, the influence of electronic effects in the β-diketone ligand, 1172.
Friedel–Crafts acylations of aromatic hydrocarbons. Part VIII, mono- and di-acylation of mesitylene, 517.

Adamantane chemistry. Part I, some intramolecular ring expansion reactions of adamantan-2-one; the synthesis of 4-substituted homoadamantanes, 671.
chemistry of. Part III, the synthesis and reactions of 1,2-disubstituted adamantane derivatives, 1303.
functionalization and cleavage of, with lead tetra-acetate; the formation of 2(3 → 4)*abeo*-adamantane from adamantane, 2124.

Addition of chlorine to the cyanogen bond. Chlorothio-(dichloroformimido)cyanamide, 875.
reactions of heterocyclic compounds. Part XLII, the mechanism of the thermal rearrangement of tetramethyl 7,9-dimethyl-9a*H*-quinolizine-1,2,3,4-tetracarboxylate to the 4*H*-isomer, 1301.

Adenine, *N*(6)-(formylmethyl), synthesis and some reactions of. Purines, pyrimidines and imidazoles. Part XXXIV, 2206.

Aeruginosin B and demethylaeruginosin B, the synthesis of. Pigments of *Pseudomonas* species. Part III, 2447.

Aflatoxin-G2, experiments directed towards a synthesis of: synthesis of the coumarino-lactone system. Studies in mycological chemistry. Part XXV, 281.

Alcohols, acetates, and ketones, in the androstane, pregnane, and oestrane series, proton magnetic resonance spectra of. Microbiological hydroxylation of steroids. Part I, 250.
A convenient general procedure for the conversion of alcohols into their monophosphate esters, 2092.
Addition of a functionalized isoprene unit to an allyl alcohol. Part II, reactions with furylmethanol and thienylmethanol and synthesis of torreyal and dendrolasin, 220.
Aspects of catalysis. Part I, reduction of unhindered cyclohexanones to axial alcohols in the presence of a soluble iridium–phosphite catalyst, 785.
Difluorimide chemistry. Part I, reactions of difluoroamino-alcohols, 1104.
Reactions of iodonium nitrate with some alcohols, 676.
Rigid polycyclic systems. The reaction between cyclopentadiene and acenaphthylene and spectral properties of the adducts and derived alcohols and ketones, 596.
Trihalogenomethyl compounds of potential therapeutic interest. Part VIII, synthesis of some epoxides, amides, alcohols, and acetylenic amines, 94.

Aldehydes, and *p*-quinones, substituent effects in light-induced reactions between. Light induced and related reactions of quinones. Part V, 645.
β-chlorovinyl-, the stereochemistry of, 2484.
β-cyano-, synthesis of, by conjugate hydrocyanation of allylideneamines followed by hydrolysis. Hydrocyanation. Part IX, 2355.
the reaction of 2-arenoylaziridines with, to form oxazolidines, 2383.
Deuteriation and tritiation of aryl aldehydes in the formyl group and the synthesis of (±)-3,4-dihydroxy-[β-$^3H_2$]phenylalanine, 2049.

Alkaloids buxus. Part IX, interconversion of cyclobuxine D and cyclobuxosuffrine, 590.
from *Croton* species. Part X, two new reduced proaporphine alkaloids, 1228.
of *Corydalis pallida* var. tenuis (Yatabe) and the structures of pallidine and kikemanine, 1060.
of *Gelsemium sempervirens*. Part III, sempervirine, 791. Part IV, derivatives of pyridine, isoquinoline, and indol-2(3*H*)-one as possible initial materials for synthesis of gelsemine, 796.
of perennial rye-grass (*Lolium perenne* L.). Part IV, isolation of a new base, perlolyrine; the crystal structure of its hydrobromide dihydrate and the synthesis of the base, 1091.
of *Physostigma venenosum*. Part IX, the absolute configuration of geneserine; an application of the nuclear Overhauser effect, 2077.
of *Punica granatum* and *Withania somnifera*, biosynthesis of some, 1792.
pyrrolizidine. The absolute configuration at C-2 in monocrotalic acid, 1334.
quinoline. Part X, (+)platydesminium salt and other alkaloids from *Skimmia japonica* Thunb. The synthesis of edulinine, 556.
Senecio. Suggested structures for isoline and bisline, two new alkaloids from *Senecio orthonniformis* Fourcade, 2312.
An approach to the synthesis of sinomenine, 624.
Biosynthesis of arborine, 2466.
Biosynthesis of lobeline, 2470.
Phenol oxidation and biosynthesis. Part XX, the mechanism of erysodienone formation *in vitro*, 1208. Part XXI, the biosynthesis of the *Erythrina* alkaloids, 1213.
Structure and biosynthesis of chlidanthine, 1224.
Studies on the synthesis of *Aspidosperma* and related alkaloids. Part II, a synthetic approach to the C-21 oxygenated. *Aspidosperma* alkaloids, 602.
Synthesis of 5,6,7,8-tetrahydro-7-methyldibenz[*c,g*]azecin-14(13*H*)-one: the structural skeleton of the protopine alkaloids, 2578.

Alkanes, arylazo-, optical rotatory dispersion spectra of geometrical isomers of. Arylazo steroids. Part VI, 106.

Alkoxides, peroxides, and oxides, organometallic. Part III, phenylmercury(II) alkoxides, 2051.
Insertion reactions of titanium alkoxides with isocyanates and carbodi-imides, 132.

Alkylation, nuclear, of 1-aminoanthraquinone leuco-derivative. Anthraquinone dyes. Part VI, 570.
of phosphoramidate and phosphinic amide anions, 1009.
reactions of the pyrrolidine enamines of 3,4-dihydronaphthalen-1(2*H*)-one and 6,7,8,9-tetrahydro-5*H*-benzocyclohepten-5-one. Some reactions of enamines. Part II, 35.

Allenes. (−)Methyl n-tetradeca-*trans*-2,4,5-trienoate, an allenic ester produced by the male dried bean beetle, *Acanthoscelides obtectus* (Say), 859.

Aloesin, a *C*-glucosylchromone from *Aloe* sp. *C*-Glycosyl compounds. Part VI, 2581.

Aluminium compounds. Aluminium(III) complexes of hydroxyflavones in absolute methanol. Part I, ligands containing only one chelating site, 344. Part II, ligands containing more than one chelating site, 1309.
Defluorination reactions by aluminium chloride and methyl iodide. Part I, halogenofluoroethanes, 949.

Aluminium (*contd.*)
Hydrocyanation. Part X, cleavage of epoxides with hydrogen cyanide and triethylaluminium and with diethylaluminium cyanide, 2365.
Amides. Alkylation of phosphoramidate and phosphinic amide anions, 1009.
Trihalogenomethyl compounds of potential therapeutic interest. Part VIII, synthesis of some epoxides, amides, alcohols, and acetylenic amines, 94.
Amidines, cyclic. Part XXII, novel isomerism of disubstituted tricycloquinazolines and molecular orientations in carcinogenesis, 2641. Part XXIII, dibenzo[*b,h*][1]benzopyrano[2,3,4-*de*][1,6]naphthyridines and their molecular orientation in carcinogenesis, 2647.
α-Amino-sulphonic acid derivatives. Part II, synthesis and ring closure of some iodomethylsulphonyl-benzamidines and -guanidines, 1429.
Preparation of *meso*-, (±)-, and optically active forms of 3,6-bis-(1-hydroxy-1-phenylpropyl)- and 3,6-bis-(1-hydroxy-1-phenylethyl)-1,2,4,5-tetrazines *via* a new synthesis of 1,2-dihydro-1,2,4,5-tetrazines from amidines, 719.
Amidinohydrazones. Thiosemicarbazone and amidinohydrazone derivatives of some 1,4-naphthoquinones, 1993.
Amido-radicals, reactions of. Photoreaction of nitroso-compounds in solution. Part XIV, 1138.
Amines, aryl-, hindered *N*-arylhydroxamic acids from, *via* nitroso-compounds, 2497.
carcinogenic, mode of action of. Part I, oxidation of *N*-arylhydroxamic acids, 1081.
hypotensive: unbridged cyclohexane analogues of mecamylamine, 1845.
mono-substituted tri-(2-pyridyl)-, the synthesis and spectra of some, 2435.
vinyl-. Part IX, reaction of cyclohexanone enamines with αβ-unsaturated ketones, 2377.
Aminoacetamides by treatment of 1,1,2,2-tetra-aminoethanes with water, 2512.
Cytotoxic compounds. Part X, carbamates derived from *NN*-bis-(2-chloroethyl)-*m*- and *NN*-bis-(2-chloroethyl)-*p*-phenylenediamine, 472.
Difluorimide chemistry. Part I, reactions of difluoroamino-alcohols, 1104. Part II, tris[(difluoroamino)-methyl]amine, 1106.
Electrochemical reactions. Part VIII, asymmetric induction during the reduction of coumarins modified by the presence of tertiary amines, 2318.
Hydrocyanation. Part IX, synthesis of β-cyano-aldehydes by conjugate hydrocyanation of allylideneamines followed by hydrolysis, 2355.
Polyhalogeno-aromatic compounds. Part XIV, nucleophilic substitution and peroxy-acid oxidation of pentabromopyridine and some of its *NN*-dialkylamino- and bis-(*NN*-dialkylamino)-derivatives, 1523.
Reaction of t-butylamine with cyclohexane-1,3-dione, 1002.
Reductive amination of substituted indole-2,3-diones, 550.
Studies related to the chemistry of melanins. Part VII, attempts to synthesise hydroxylated bi-indolyls, biphenyls, and indoline-2-carboxylic acid as possible intermediates in the formation of melanins from 3,4-dihydroxyphenethylamine and 3,4-dihydroxyphenylalanine, 865. Part VIII, the pyrrolecarboxylic acids formed by oxidation or hydrolysis of melanins derived from 3,4-dihydroxyphenethylamine or (±)-3,4-dihydroxyphenylalanine, 1128. Part IX, syntheses of specifically deuteriated 3,4-dihydroxyphenethylamines and (±)-3,4-dihydroxyphenylalanines, 1134.
Synthesis of 3-amino-1,2,3,4-tetrahydro-6-hydroxycarbazole, an analogue of 5-hydroxytryptamine, 325.
The Dimroth rearrangement. Part XII, transformation by alkali of 4-amino-3-benzyl-1,2,3-triazole and its 5-substituted derivatives into the corresponding 4-benzylamino isomers. Retrogression of this reaction in neutral solvents, 230.
The rearrangement of *N*-(2-bromoallyl)-arylamines to 2-methylindoles, 74.
Trihalogenomethyl compounds of potential therapeutic interest. Part VIII, synthesis of some epoxides, amides, alcohols, and acetylenic amines, 94.
Amino-acids, linear polypeptides of a known repeating sequence of. Synthesis of poly-(L-tyrosyl-L-glutamyl-L-valylglycyl)[1-^{14}C]glycine ethyl ester, 2247.
Amino-acid 4-methoxybenzyl esters, 964.
A stable reagent for the preparation of *N*-*o*-nitrophenylthio-amino-acids, 2180.
Mass spectral studies. Part VII, unusual fragmentation of some *N*-trifluoroacetyl amino-acid methyl esters, 116.
Oxidations involving silver. Part VI, oxidation of α-amino-acids and α-amino-esters with silver(II) picolinate and silver(II) oxide, 815.
Amino-alcohols, a series of, related to benzhexol(1-cyclohexyl-1-phenyl-3-piperidinopropan-1-ol), 1298.
Aminobicyclo[2,2,1]heptanes. Part II, diastereoisomeric dimethylaminobornyl acetates, 49.
β-Amino-enones, ultraviolet spectral study of, 111.
α-Amino-sulphonic acid derivatives. Part II, synthesis and ring closure of some iodomethylsulphonyl-benzamidines and -guanidines, 1429.
Ammonia, reaction of, with acylated disaccharides. Part IX, acetyl derivatives of melibiose, 1908.
Ammonium cerium(IV) nitrate, nitrate esters as intermediates in the oxidation of toluenes by, 1630.
Amyrin, α- and β-, conversion of, into ursolic and oleanolic acids respectively. A synthesis of oleanolic acid, 678.
Analgesics, novel, and molecular rearrangements in the morphine–thebaine group. Part XVII, compounds related to the thebaine–maleic anhydride adduct, 560.
Androsta-2,3-diene-1,17-dione, 1065.
Androsta-2,4,-diene-6,17-dione, 2473.
Androstane-17-carboxylic acids, (etianic acids) and related compounds, low temperature circular dichroism of. Optical rotatory dispersion and circular dichroism. Part LXVIII, 2417.
Androstanes. Microbiological hydroxylation of steriods. Part I, proton magnetic resonance spectra of ketones, alcohols, and acetates in the androstane, pregnane, and oestrane series, 250.
Pyrolysis of 17-oxygenated 16-methylene-20-oxosteroids. Part I, formation of 2-methylandrostano[17,16-*c*]-furans, 1344. Part II, oxidative cleavage of 2′-methylandrostano[17,16-*c*]furans, 1349.
Some cyclohexane- and androstane-substituted pyrimidines and pyrazoles, 1885.
Steroids. Part XXXVI, some 13,17-secoandrostanes, 1513.
Studies in the steroid group. Part LXXX, preparation of 2- and 16-oxo-, and 3,16- and 2,16-dioxo-5α-androstane, and 2-oxo-5α-cholestane, 244.

Androstanones. Conformational free energy differences in steroids. Part V, equilibration of 5α- and 5β-androstan-6-one derivatives structurally modified in ring D, 2421.

5α-Androst-2-ene-1,17-dione, 4α-bromo-, circular dichroism, nuclear magnetic resonance, and crystal structure of, 2111.

Anilines, *N*-(α-substituted benzyl)-*N*-methyl-, rearrangement of the methohydroxides of. The thermal decomposition of quaternary ammonium hydroxides. Part IV, 2276.

substituted, oxidation to nitroso-compounds, 1433.

A study of some reactions of the intermediate isolated from the *NN*-dimethylaniline–tetracyanoethylene reaction, 1390.

The formation of malononitrile derivatives in the reaction of tetracyanoethylene with *NN*-dialkylanilines, 1394.

Use of trimethylsilyl derivatives in simple syntheses of deuteriated anilines, phenols, and benzenethiols, 1577.

Anils. *o*-Nitroaniline derivatives. Part I, the preparation and stability of *o*-nitroanils, 2144.

Anthracenes, 9-alkyl- and 9-aryl-10-halogeno-, reactions of. Reactions of copper(II) halides with organic compounds. Part VI, 942.

Anthranilic acid, methyl ester of, reactions with ethyl γ-bromobutyrate, 1126.

Anthranils and benzimidazoles, syntheses of. Reduction of nitro- and nitroso-compounds by tervalent phosphorus reagents. Part VIII, 2441.

Anthraquinones. Anthraquinone dyes. Part V, a contribution to the study of the Marschalk reaction. Nuclear methylation of 1-aminoanthraquinone leuco-derivative, 567. Part VI, nuclear alkylation of 1-aminoanthraquinone leuco-derivative, 570.

The minor anthraquinones of *Xanthoria parietina* (L.) Beltram, the chlorination of parietin, and the synthesis of fragilin and 7-chloro-emodin (' AO-1 '), 307.

Antibiotics, cephalosporin, chemistry of. Part XVI, configurational and conformational analysis of deacetoxy-Δ^2- and -Δ^3-cephalosporins and their corresponding sulphoxide isomers by nuclear magnetic resonance, 340.

Arborine, biosynthesis of, 2466.

Aromatic compounds. A novel steroidal aromatization reaction, 513.

N-Acetyl-*N*-trichloromethylsulphenylarenesulphonamides, 225.

Aromatic polyfluoro-compounps. Part XLIV, nucleophilic replacement reactions of 2,3,4,5,6-pentafluorostyrene, 1271.

steroids. Part IV, chromium trioxide oxidation of some oestra-1,3,5(10),9(11)-tetraenes, 1706.

substitution. Part XXV, reaction of 3-picoline with some substituted phenyl-lithium derivatives, 128.

Diborane as a reducing agent. Part III, the reduction of oxygen heterocyclic carbonyl compounds and aromatic esters, and the catalytic action of boron trifluoride, 1667.

Friedel–Crafts acylations of aromatic hydrocarbons. Part VIII, mono- and di-acylation of mesitylene, 517.

Hindered *N*-arylhydroxamic acids from arylamines *via* nitroso-compounds, 2497.

Homolytic aromatic substitution. Part XXXIV, major products from the reaction of benzoyl peroxide with *p*-disubstituted benzenes, 2653.

reactions of perfluoroaromatic compounds. Part II, reactions of perfluorobenzoyl peroxide with aromatic compounds, 1260.

substitution of heteroaromatic compounds. Part II, homolytic methylation of pyridine, quinoline, and isoquinoline in acidic and non-acidic media, 2169.

Iodination and iodo-compounds. Part III, iodination of some aromatic nitro-compounds with iodine in 20% oleum, 1480.

Metal ions and complexes in organic reactions. Part XI, reactions in pyridine between copper species and aryl halides, in particular between copper(I) oxide and 2-bromonitrobenzene, 1967.

Organoboron compounds. Part VII, photochemical reactions of boron halides with aromatic hydrocarbons and aromatic ethers, 485.

Photochemical phenylation and oxidation of halogen-substituted diphenylmethanes in benzene, 2586.

Polyfluoroarenes. Part X, polyfluoroaromatic azo-compounds, 449. Part XI, reactions of tetrafluorophthalonitrile with nucleophilic reagents, 456. Part XII, some azoxy-compounds and benzotriazoles, 1519. Part XIII, further homolytic reactions of polyfluoroiodobenzenes, 2187. Part XIV, synthesis of halogeno-phthalocyanines, 2667.

Polyhalogenoaromatic compounds. Part XI, some reactions of 2,3,5,6-tetrachloro-4-mercapto- and 2,3,5,6-tetrachloro-4-methylthiopyridine, 193. Part XII, synthesis and cycloaddition reactions of pentafluoro- and pentachloro-benzonitrile *N*-oxide, 1165. Part XIII, the reduction of pentachloropyridine and derivatives with lithium aluminium hydride and other complex metal hydrides, 1375. Part XIV, nucleophilic substitution and peroxy-acid oxidation of pentabromopyridine and some of its *NN*-dialkylamino- and bis-(*NN*-dialkylamino)-derivatives, 1523. Part XV, preparation and reactions of tetrachloropyridine-4-sulphenyl chloride and tetrachloropyridine-4-sulphonyl chloride, 1530.

Reactions with asymmetric diarylethanes and diarylethylenes. Part XIII, rearrangements of 1,1-dihalogeno-2,2-diarylethanes and the corresponding 1-halogenoethylenes in boiling ethylene glycol, alone or in the presence of sodium 2-hydroxyethoxide, 409. Part XIV, addition of xanthenyl chloride to the ethylenes, 1923.

Reactivity of Mannich bases. Part XII, ring alkylation of aromatic and heterocyclic compounds, 1157.

of vinyl sulphonic esters. Part I, addition of *O*-sulphenyl arenesulphonates to acetylene derivatives, 2617. Part II, cyclisation of arylthiovinyl sulphonates to benzo[*b*]thiophen derivatives, 2621. Part III, reactivity of arylthiovinyl sulphonates with nucleophiles, 2625.

Selective reduction of nitroaromatic compounds, 435.

Sulphonohydrazides and related compounds. Part XII, some arylsulphonyl derivatives of carbonohydrazide and related hydrazides, 2626.

Synthesis of aryloxy sulphoxonium salts, 682.

The reaction between nitrosyl chloride and aryltrimethylstannanes. A new method of preparing aromatic nitroso-compounds, 1717.

Arsenic. Preparation, reactions and structure of 5,10-epoxy-, 5,10-epithio-, 5,10-episeleno-, and 5,10-epitelluro-5,10-dihydroarsanthren, 810.

Arsenic (*contd.*)
Synthesis of some nitrogen–arsenic heterocycles: 5,10-dihydro-5,10-*o*-benzenophenarsazine (azarsatriptycene), 10,11-dihydro-5-phenyl-5*H*-dibenzo[*b*,*f*][1,4]azarsepine, and 2,3-dihydro-1,2-diphenyl-1*H*-benz[*c*]azarsole, 158.
Artemisia, *Salvia*, and *Chrysanthemum* species, biosynthesis of (+)- and (−)-camphor in. Terpene biosynthesis. Part III, 2694.
Arugosin, a metabolite of a wild-type strain of *Aspergillus rugulosus*, the molecular structure of. The biosynthesis of phenols. Part XXI, 1175.
Arynes. An aryne route to laureline, and related topics, 2234.
and steroids. Part III, reactions of arynes with ring A aromatic steroids and steroidal 1(10),9(11)-dienes. Aryne chemistry. Part XXVI, 2493.
Aryne chemistry. Part XXVI. Arynes and steroids. Part III, reactions of arynes with ring A aromatic steroids and steroidal 1(10),9(11)-dienes, 2493. Part XXVII, the photolysis of 1,2-di-iodotetrafluorobenzene in the presence of benzene, 2569.
Reactive intermediates. Part XI, the generation and some reactions of benzynequinone, 583.
Asperenone [all-*trans*(*E*)-8-methyl-13-phenyltrideca-4,6,8,-10,12-pentaen-3-one], a pigment of *Aspergillus* species of fungi, synthesis of, 1404.
Aspergillus species of fungi, synthesis of asperenone [all-*trans*(*E*)-8-methyl-13-phenyltrideca-4,6,8,10,12-pentaen-3-one], a pigment of, 1404.
ochraceus Wilh., synthesis of ochratoxin A, a metabolite of. Studies in mycological chemistry. Part XXIV, 278.
rugulosus. The biosynthesis of phenols. Part XXI, the molecular structure of arugosin, a metabolite of a wild-type strain of *Aspergillus rugulosus*, 1175.
versicolor, a metabolite of, versimide, 2572.
Aspidosperma and related alkaloids, studies on the synthesis of. Part II, a synthetic approach to the C-21 oxygenated *Aspidosperma* alkaloids, 602.
Asymmetric diarylethanes and diarylethylenes, reactions with. Part XIII, rearrangements of 1,1-dihalogeno-2,2-diarylethanes and the corresponding 1-halogenoethylenes in boiling ethylene glycol, alone or in the presence of sodium 2-hydroxyethoxide, 409.
Autoxidation products of santonene, n.m.r. studies of. Chemistry of santonene. Part IV, 2008.
Aza-analogues of pteridine. Part I, 1,2,4,6,8-pentaazanaphthalene and some methyl, dihydro-, and 5-alkoxy-derivatives, 139. Part II, the novel use of silver oxide in transetherification of alkoxy-1,2,4,6,8-pentaazanaphthalenes, alkoxynitropyrimidines, and related systems, 2661.
Azabenzocycloheptenones. Part XI, synthesis and some reactions of the tetrahydrobenz[*c*]azepin-5-one system, 1461. Part XII, application of the Lansbury synthesis to the preparation of tetrahydro-1-benzazepin-3-ones, 2191.
Azaindoles (diazaindenes). Part II, thermal indolisation of 3- and 4-pyridylhydrazones, 303. Part III, reactions of Vilsmeier reagents leading to 3-formyl-1,6-diazaindene and -1,4-diazabenz[*f*]indene, 498.
Azarsatriptycene, synthesis of, 158.
Aza-steroids. Cyclisation of unsaturated bases derived by Hofmann degradation of perhydroazepines: a convenient synthesis of aza-steroids from steroidal ketoximes, 188
Azepines, perhydro-, cyclisation of unsaturated bases derived by Hofmann degradation of: a convenient synthesis of aza-steroids from steroidal ketoximes, 188.
Azepino[1,2-*a*]indolium salts, further approaches to the synthesis of. Azonia-azulene salts. Part II, 1490.
Azides. Reaction of picryl azide with *N*-methylindoles: the crystal structure of 1-methyl-2-picryliminoindoline, 956.
Studies in azide chemistry. Part II, photolysis of 2*H*-hexafluoropropyl and 2-chloro-1,1,2-trifluoroethyl azide, 1017. Part III, polyfluorinated azides from 1*H*- and 2*H*-pentafluoropropene and perfluorobut-2-yne, 2172.
Azidotropones, the chemistry of. Part III, formation and decomposition of Δ^2-triazolines derived from norbornene, 1935.
Azines. Synthesis of azine perhalide adducts, 2674.
Aziridines, 2-arenoyl-, reaction with aldehydes to form oxazolidines, 2383.
synthesis of, from amino-nitrenes and olefins. Reactive intermediates. Part X, 576.
Azirines. Studies on heterocyclic chemistry. Part VII, thermally induced dimerization of 5-aminoisoxazoles and 2*H*-azirines and photochemistry of 5-aminoisoxazoles, 1825.
Azo-compounds, cyclic α-monocarbonyl, preparation and reactions of: 1-pyrazolin-3-one derivatives, 540.
polyfluoroaromatic. Polyfluoroarenes. Part X, 449.
Azoles, *N*-aryl-, by Ullmann condensation. Syntheses of heterocyclic compounds. Part II, 85.
Azonia-azulene salts. Part II, further approaches to the synthesis of azepino[1,2-*a*]indolium salts, 1490.
Azopropionanilide, 2-acetyl-2-phenyl-, and related compounds, cleavage of by boron trifluoride. New Japp–Klingemann reactions, 1986.
Azoxy-compounds and benzotriazoles. Polyfluoroarenes. Part XII, 1519.
Azulenes. Carcinogenic nitrogen compounds. Part LXVIII, a new class of pseudoazulenes: [1]benzoselenino[4,3-*b*]indoles, 1058.

B

Barakol, the structure and synthesis of: a noval dioxaphenalene derivative from *Cassia siamea*, 1686.
Benzaldhyde and benzylidenecyclohexanone, reactions of enamines with, 771.
Benzamidines and -guanidines, some iodomethylsulphonyl-, synthesis and ring closure of. 2-Amino-sulphonic acid derivatives. Part II, 1429.
Benzazarsole. Synthesis of some nitrogen–arsenic heterocycles: 5,10-dihydro-5,10-*o*-benzenophenarsazine (azarsatriptycene), 10,11-dihydro-5-phenyl-5*H*-dibenzo[*b*,*f*][1,4]-azarsepine, and 2,3-dihydro-1,2-diphenyl-1*H*-benz[*c*]-azarsole, 158.
Benzazepinones. Azabenzocycloheptenones. Part XI, synthesis and some reactions of the tetrahydrobenz[*c*]-azepin-5-one system, 1461. Part XII, application of the Lansbury synthesis to the preparation of tetrahydro-1-benzazepin-3-ones, 2191.
4,5-Dihydro-1*H*-1-benzazepin-2(3*H*)-one from γ-phenylbutyric acid: an abnormal Schmidt reaction, 2058.
Benzenes, *p*-disubstituted, with benzoyl peroxide, major products from the reaction of. Homolytic aromatic substitution. Part XXXIV, 2653.

Benzenes (*contd.*)
hexakis(trifluoromethyl)- and hexakis(pentafluoroethyl)-, the valance-bond isomers of. Valence-bond isomer chemistry. Part I, 1232.
Competition between substitution and electron transfer in some 1,4-dialkoxybenzenes in concentrated sulphuric acid and the influence of the *ortho*-substituent on the β-proton splitting constants of their cation radicals, 2613.
Benzenethiols and aminomethylnaphthols, mechanism of the reaction between. Reactivity of Mannich bases. Part XIII, 1866.
Use of trimethylsilyl derivatives in simple syntheses of deuteriated anilines, phenols, and benzenethiols, 1577.
Benzene-1,2,4-triols, formation of 2-hydroxy-semiquinones during the autoxidation of, in alkaline solution. The chemistry of hydroxy-quinones. Part VI, 2101.
Benzenophenarsazine. Synthesis of some nitrogen–arsenic heterocycles: 5,10-dihydro-5,10-*o*-benzenophenarsazine (azarsatriptycene), 10,11-dihydro-5-phenyl-5*H*-dibenzo-[*b*,*f*]1,4]azarsepine, and 2,3-dihydro-1,2-diphenyl-1*H*-benz[*c*]azarsole, 158.
Benzhexol (1-cyclohexyl-1-phenyl-3-piperidinopropan-1-ol), a series of amino-alcohols related to, 1298.
Benzimidazoles and anthranils, syntheses of. Reduction of nitro- and nitroso-compounds by tervalent phosphorus reagents. Part VIII, 2441.
2,3-dihydro-, synthesis and reactions of. Heterocyclic syntheses. Part XXIII, 825.
Benz[*cd*]indazole system, the chemistry of the. Benz[*cd*]-indazole 1-oxide, benz[*cd*]indazole 1,2-dioxide (1,8-dinitrosonaphthalene), and related compounds, 1693.
Benziodazoles: synthesis for bioactivity studies, 862.
2,1-Benzisoxazoles, mechanism of the conversion of 2-nitrobenzyl systems into, 2660.
Thermal rearrangement of 3-benzoyl-2,1-benzisoxazole to 2-phenyl-4*H*-3,1-benzoxazone in solution, 242.
Benzo[*a*]carbazoles, 5-amino-1,2,3,4,4a,5,6,11b-octahydro-, the synthesis of some, 2074.
Benzocyclobutenes. Wittig reactions of 1,2-dihydro-1,2-bis(triphenylphosphoranylidene)benzocyclobutene and benzocyclobutene-1,2-quinone. The synthesis of dibenzo[*a*,*c*]benzo[3,4]cyclobuta[1,2-*f*]cyclo-octene, 2137.
Benzocycloheptene, some novel heterocyclic systems related to, 327.
5*H*-Benzocyclohepten-5-one, 6,7,8,9-tetrahydro-, and 3,4-dihydronaphthalen-1(2*H*)-one, some alkylation reactions of the pyrrolidine enamines of. Some reactions of enamines. Part II, 35.
1,5-Benzodiazepin-2-ones, synthesis of some, 1117.
Benzodiazines, the reaction of dimethylketen with some. Keten. Part IX, 1651.
1,4-Benzodioxan, 2-imino-, formation of, and its trimerisation to give a derivative of 1,3,5-triazine, 1296.
Benzo[*b*]-*p*-dioxino[2,3-*e*]-*p*-dioxin, 2,3,4aα,10aα-tetrahydro-, and bi-1,3-dioxan-2-yl. Halogeno-1,4-dioxans and their derivatives. Part V, 2457.
Benzo[*j*]fluoranthenes. Synthesis of benzo[*b*]naphtho-[2,1-*j*]fluoranthene, benzo[*a*]naphtho[2,3-*j*]fluoranthene, and other related benzo[*j*]fluoranthene derivatives, 1832.
Benzo[*c*]fluorenones. Part III, the conversion of 4,4-disubstituted 3-alkoxycarbonylbut-3-enoic acids into benzo[*c*]fluorenone derivatives, 1905.
Benzofurans. Novel heterocyclic spirobenzofurans, 931.
Benzo[*b*]furan-2-spiro-1′-cyclohexa-2′,5′-dien-4′-one, 2,3-dihydro-, and 3,4-dihydro-2*H*-benzo[*b*]pyran-2-spiro-1′-cyclohexa-2′,5′-dien-4′-one, the acid-catalysed rearrangement of, 2543.
Benzoic acid, thio glycerol esters of, and glycerol esters of thiobenzoic *O*-acid, 467.
9*H*-Benzo[5,6]indeno[2,1-*c*]phenanthrene, *cis*-9a,10-dihydro-9-methyl-10,15-diphenyl-, photocyclisation of. Overcrowded molecules. Part VI, 1997.
Benzonaphthofluoranthenes. Synthesis of benzo[*b*]naphtho-[2,1-*j*]fluoranthene, benzo[*a*]naphtho[2,3-*j*]fluoranthene and other related benzo[*j*]fluoranthene derivatives, 1832.
Benzo[*c*]phenanthrenes. Studies in photochemistry. Part VIII, the ultraviolet, proton magnetic resonance, and mass spectra, and photocyclisation of some styrylnaphthalenes to some benzo[*c*]phenanthrenes and chrysenes, 163.
Benzophenones, synthesis of: anomalous Friedel–Crafts reactions, 937.
Extractives from Guttiferae. Part XVI, biogenetic-type synthesis of xanthones from their benzophenone precursors, 392.
Benzopyranones. *o*-Quinonoid compounds. Part II, 1,4-diphenyl-2-benzopyran-3-one and its iron complexes, 530. Part III, benzopyran-3-ones and their salts, 536.
Benzopyrans. Metabolites of *Helminthosporium monoceras*: structures of monocerin and related benzopyrans, 2598.
2*H*-Benzo[*b*]pyran-2-spiro-1′-cyclohexa-2′,5′-dien-4′-one, 3,4-dihydro-, and 2,3-dihydro-benzo[*b*]furan-2-spiro-1′-cyclohexa-2′,5′-dien-4′-one, the acid-catalysed rearrangement of, 2543.
Benzopyrones. Part I, 6-amino- and 6-hydroxy-2-substituted chromones, 2230. Part II, 7-hydroxy-4-oxochromen-2-carboxylic acid and some of its derivatives, 2609.
Benzo[*a*]quinolizin-3-one, 1,2,4,6,7,11b-hexahydro-, and some related compounds, synthesis of, 150.
Benzoquinone imines. Photolysis of t-butyl-substituted *p*-benzoquinone mono- and di-imine derivatives, 2604.
1,2-Benzoquinones, tetrahalogeno-, reactions of. Part III, reaction of tetrachloro-1,2-benzoquinone with tetralones and naphthols: pathway to the condensates, 1257.
1,2,3-Benzoselenadiazole and 1,2,3-benzothiadiazole, investigations on the quaternisation of. 1,2,3-Benzothiadiazole. Part VI, 2060.
[1]Benzoselenino[4,3-*b*]indoles: a new class of pseudoazulenes. Carcinogenic nitrogen compounds. Part LXVIII, 1058.
Benzoselenopheno[2,3-*b*]benzoselenophens, nuclear magnetic resonance and mass spectra of, 939.
4*H*-Benzo[*e*][1,3,4]thiadiazine ring, synthesis of: transitional activation phenomena, 854.
1,2,3-Benzothiadiazole. Part VI, investigations on the quaternisation of 1,2,3-benzothiadiazole and 1,2,3-benzoselenadiazole, 2060.
1,2,3-Benzothiadiazoles. Part I, a simplified synthesis of 1,2,3-benzothiadiazoles, 2250. Part II, a novel rearrangement of diazonium salts derived from 7-amino-1,2,3-benzothiadiazoles, 2514.
[1]Benzothieno[2,3-*c*]pyridine and [1]benzothieno[3,2-*c*]-pyridine, some derivatives of, 1013.
some polycyclic systems related to, 2269.
3-Benzo[*b*]thienyl-lithium, 2-phenyl-, and related compounds, synthesis, reactions, and stability of. Condensed thiophen ring systems. Part IV, 2592.

Benzo[*b*]thiophen derivatives. Part XI, nitration of 3-acetyl- and 3-formyl-benzo[*b*]thiophens, 933.
derivatives, cyclisation of arylthiovinyl sulphonates to. Reactivity of vinyl sulphonic esters. Part II, 2621.
Benzo[*b*]thiophens. Condensed thiophen ring systems. Part III, a new synthesis of benzo[*b*]thiophen-2(3*H*)- and -3(2*H*)-ones and some reactions of benzo[*b*]thiophen-2(3*H*)-one with dimethyl sulphate in the presence of base, 1926.
Substitution reactions of benzo[*b*]thiophen derivatives. Part I, bromination and nitration of 2,3-dibromobenzo[*b*]thiophen and its 5-methyl derivative, 1949.
1,2,3-Benzotriazines, and diaryltriazenes, mass spectra of, 1238.
Benzotriazines. Triazines and related products. Part III, synthesis and rearrangement of 3,4-dihydro-4-imino-1,2,3-benzotriazines, 765. Part IV, methylation of 3-aryl-3,4-dihydro-4-imino-1,2,3-benzotriazines, 2284. Part V, the structure of some red *N*-alkyl-1,2,3-benzotriazines, 2289. Part VI, synthesis and properties of 4-amino-2(2*H*)-imino-*s*-triazino[1,2-*c*][1,2,3]-benzotriazines, 2298. Part VII, reductive fission of 1,2,3-benzotriazines with hydrazine and Raney nickel, 2308.
1,2,3-Benzotriazin-4(3*H*)-one, thermolysis of, 2070.
Benzotriazoles and some azoxy-compounds. Polyfluoroarenes. Part XII, 1519.
1,4-Benzoxazine-6,7-quinones, 2,3-dihydro-, and related compounds, 2078.
Benzoxazol-2(3*H*)-ones, 6-arylsulphonimido-, preparation and some reactions of, 850.
4*H*-3,1-Benzoxazone, 2-phenyl-, thermal rearrangement of 3-benzoyl-2,1-benzisoxazole to, in solution, 242.
Benzoyl peroxide with *p*-disubstituted benzenes, major products from the reaction of. Homolytic aromatic substitution. Part XXXIV, 2653.
Benzylidene compounds, reactions of some, with potassium cyanide, 1916.
Benzynequinone, the generation and some reactions of. Reactive intermediates. Part XI, 583.
Bicyclo[2,2,1]heptanes, amino-. Part II, diastereoisomeric dimethylaminobornyl acetates, 49.
Bicyclo[4,2,1]nonane, new derivatives of, 2238.
Bicyclo[3,2,2]nona-2,6,8-triene-6,7-dicarboxylate, dimethyl, synthesis of, 2524.
Bi-1,3-dioxan-2-yl and 2,3,4aα,10aα-tetrahydrobenzo[*b*]-*p*-dioxino[2,3-*e*]-*p*-dioxin. Halogeno-1,4-dioxans and their derivatives. Part V, 2457.
Bi-indoyls. Studies related to the chemistry of melanins. Part VII, attempts to synthesise hydroxylated bi-indolyls, biphenyls, and indoline-2-carboxylic acid as possible intermediates in the formation of melanins from 3,4-dihydroxyphenethylamine and 3,4-dihydroxyphenylalanine, 865.
Biosynthesis and structure of chlidanthine, 1224.
of arborine, 2466.
of lobeline, 2470.
of phenols. Part XXI, the molecular structure of arugosin, a metabolite of a wild-type strain of *Aspergillus rugulosus*, 1175.
of (±)protolichesterinic acid in *Cetraria islandica*, 1848.
of radicinin and pyrenophorin. Metabolic products of *Stemphylium radicinum*. Part III, 1860.
of some alkaloids of *Punica granatum* and *Withania somnifera*, 1792.
of steroids and terpenoids, investigations on the. Part II, role of 24-methylene derivatives in the biosynthesis of steroids and terpenoids, 775.
of triterpenes, a chemical model for a possible oxidative rearrangement in: the rearrangement of 7α,8α- and 8,9-epoxytirucallanes, 1503.
Extractives from Guttiferae. Part XVI, biogenetic-type synthesis of xanthones from their benzophenone precursors, 392.
Phenol oxidation and biosynthesis. Part XX, the mechanism of erysodienone formation *in vitro*, 1208. Part XXI, the biosynthesis of the *Erythrina* alkaloids, 1213.
Studies in terpenoid biosynthesis. Part VI, the stereochemistry of some stages in tetracyclic diterpene biosynthesis, 2610.
Terpene biosynthesis. Part II, biosynthesis of thujane derivatives in *Thuja*, *Tanacetum*, and *Juniperus* species, 2689. Part III, biosynthesis of (+)- and (−)-camphor in *Artemisia*, *Salvia*, and *Chrysanthemum* species, 2694.
Biotin and related compounds. Optical rotatory dispersion and circular dichroism. Part LXVII, 1330.
Biphenylenes. Part XXVI, reactions of 2,3,6,7-tetramethoxy-1,8-dimethylbiphenylene and of 6,7-dimethoxy-1,8-dimethylbiphenylene-2,3-quinone, 1084. Part XXVII, synthesis of compounds derived from 2-acetylbiphenylene, 2500.
Two syntheses of dibenzo[*b*,*h*]biphenylene, 2162.
Biphenyls. Studies related to the chemistry of melanins. Part VII, attempts to synthesise hydroxylated bi-indolyls, biphenyls, and indoline-2-carboxylic acid as possible intermediates in the formation of melanins from 3,4-dihydroxyphenethylamine and 3,4-dihydroxyphenylamine, 865.
4,4′-Bipyridylium, *NN′*-dimethyl-, (paraquat) salts, and phenols, stable crystalline complexes from. Charge transfer spectra and reaction intermediates. Part III, 1422.
Bisline and isoline, two new alkaloids from *Senecio othonniformis* Fourcade, suggested structures for. The *Senecio* alkaloids, 2312.
Bisthiazolo[3,2-*a*:4′,5′-*d*]pyrimidine derivatives, studies on. Part II, 1114.
Bixin, synthesis of methyl natural. Caroteroids and related compounds. Part XXVI, 235.
Boron trifluoride-catalysed rearrangements of 5,6-epoxy-3β-hydroxy- and 5,6-epoxy-3β-methoxy-steroids. Steroids. Part X, 1626.
trifluoride, cleavage of 2-acetyl-2-phenylazopropionanilide and related compounds by. New Japp–Klingemann reactions, 1986.
Diborane as a reducing agent. Part III, the reduction of oxygen heterocyclic carbonyl compounds and aromatic esters, and the catalytic action of boron trifluoride, 1667.
Organoboron compounds. Part VII, photochemical reactions of boron halides with aromatic hydrocarbons and aromatic ethers, 485. Part VIII, aliphatic and aromatic diboronic acids, 488. Part IX, diborinic acids and their derivatives, 2225. Part X, the reaction of lithium with trialkyl borates, 2228.
Stereochemistry of reduction of epoxides by borohydride anion, 928.
Bradykinin, synthesis of peptides related to, 1042.

Bromine compounds. Bromination of copper chelates of monoarylhydrazones of triketones, 1056

Chemistry of cyclotriveratrylene (10,15-dihydro-2,3,7,8,12,13-hexamethoxy-5*H*-tribenzo[*a*,*d*,*g*]cyclononene. Part II, bromination, 465.

Circular dichroism, nuclear magnetic resonance, and crystal structure of 4α-bromo-5α-androst-2-ene-1,17-dione, 2111.

Preparation and reactions of ethyl 4-bromo-2,3-dioxobutyrate 2-arylhydrazones and 4-bromo-2,3-dioxo-1-phenylbutanal 2-arylhydrazones, 656.

Preparation of optically active 2-bromo-3-methylbutane from 3-methylbutan-2-ol without rearrangement, 67.

Substitution reactions of benzo[*b*]thiophen derivatives. Part I, bromination and nitration of 2,3-dibromobenzo[*b*]thiophen and its 5-methyl derivative, 1949.

The rearrangement of *N*-(2-bromoallyl)-arylamines to 2-methylindoles, 74.

γ-Bromobutyric acid, ethyl ester of, reactions with methyl anthranilate, 1126.

Butadiene, reaction of tetramethyldiphosphine with, 1990.

Buta-1,3-diene-1-thiol type compounds, mechanism of oxidative ring closure of, with halogens, to give thiophen derivatives, 914.

Butane, 2-bromo-3-methyl-, optically active, preparation of, from 3-methylbutan-2-ol without rearrangement, 67.

Butan-2-ol, 3-methyl-, preparation of optically active 2-bromo-3-methylbutane from, without rearrangement, 67.

But-2-yne, perfluoro-, and 1*H*- and 2*H*-pentafluoropropene, polyfluorinated azides from. Studies in azide chemistry. Part III, 2172.

Buxus alkaloids. Part IX, interconversion of cyclobuxine D and cyclobuxosuffrine, 590.

C

^{14}**C**-labelled (+)-*trans*-chrysanthemum mono- and dicarboxylic acids, syntheses of, and of related compounds, 1076.

Camphor derivatives; ' anti-octant ' behaviour of hydroxy- and acetoxy-substituents. Optical rotatory dispersion and circular dichroism. Part LXIX, 2678.

Terpene biosynthesis. Part III, biosynthesis of (+)- and (−)-camphor in *Artemisia*, *Salvia*, and *Chrysanthemum* species, 2694.

Capaurimine, elucidation of the structure of, 2342.

(+)-*cis*-Caran-5-one, volatile products of the photolysis of. The chemistry of terpenes. Part XI, 1447.

Carbamates derived from *NN*-bis-(2-chloroethyl)-*m*- and *NN*-bis-(2-chloroethyl)-*p*-phenylenediamine. Cytotoxic compounds. Part X, 472.

The synthesis of potential insecticides. Part II, carbamic esters of 4-alkylthiopyrazolones, 445. Part III, carbamic esters of 3-cyano-4-hydroxy-thiophens and -pyrroles, 2409.

Carbazoles, 3-substituted *cis*-hexahydro-, configurational isomers of, 1.

Synthesis of 3-amino-1,2,3,4-tetrahydro-6-hydroxycarbazole, an analogue of 5-hydroxytryptamine, 325.

Carbene, dichloro-, addition of, to some acyclic trienes, 2000.

Carbodi-imides and isocyanates, insertion reactions of titanium alkoxides with, 132.

Diazoketones from the interaction of diazoalkanes with carboxylic acid–dicyclohexylcarbodi-imide mixtures, 971.

Heterocyclic compounds from urea derivatives. Part XVI, interaction of carbonohydazide and carbodi-imides, 19. Part XVII, reactions of 1-phenylcarbonohydrazide and 1-phenylthiocarbonohydrazide with carbodi-imides, 26.

Carbohydrates, nucleophilic displacement reactions in. Part XIV, the reaction of 2,3-*O*-isopropylidene-5,6-bis-*O*-methylsulphonyl-α-D-mannofuranose with sodium methoxide: a route to L-allose derivatives, 1273. Part XV, displacements with 1,2:5,6-di-*O*-isopropylidene-3-*O*-*p*-tolylsulphonyl-β-L-talofuranose, 1632.

Nitrogen-containing carbohydrate derivatives. Part XXIII, some ring-opening reactions of methyl 2,3-*N*-aroylepimino-4,6-*O*-benzylidene-2,3-dideoxy-α-D-mannopyranosides, 843.

α-Carbolines, synthesis of some substituted, 1355.

Carbonium ions, stable. Part I, 2-ferrocenylnorbornan-2-yl cation, 2552. Part II, the properties of 1-ferrocenyl-3-arylallyl cations, 2556.

Carbonohydrazide. Heterocyclic compounds from urea derivatives. Part XVI, interaction of carbonohydrazide and carbodi-imides, 19. Part XVII, reactions of 1-phenylcarbonohydrazide and 1-phenylthiocarbonohydrazide with carbodi-imides, 26.

Carcinogenic amines, mode of action of. Part I, oxidation of *N*-arylhydroxamic acids, 1081.

nitrogen compounds. Part LXVIII, a new class of pseudoazulenes: [1]benzoselenino[4,3-*b*]indoles, 1058.

compounds. Potentially carcinogenic cyclopenta[*a*]phenanthrenes. Part IV, synthesis of 17-ketones by the Stobbe condensation, 1266.

Carotenoids and related compounds. Part XXVI, synthesis of methyl natural bixin, 235. Part XXVII, conversion of fucoxanthin into paracentrone, 241.

Cassamic acid and its congeners, the configuration of the 14-methyl group in, 1705.

***Cassia occidentalis* Linn.,** chemical investigations on. Part I, isolation and structure of cassiollin, a new xanthone, 1285.

***Cassia siamea*.** The structure and synthesis of barakol: a novel dioxaphenalene derivative from *Cassia siamea*, 1686.

Cassiollin, a new xanthone, isolation and structure of. Chemical investigations on *Cassia occidentalis* Linn. Part I, 1285.

Cassminic acid, a minor constituent from the bark of *Erythrophleum guineense*, 1703.

Catalysis, aspects of. Part I, reduction of unhindered cyclohexanones to axial alcohols in the presence of a soluble iridium–phosphite catalyst, 785.

Caulerpin, a new red pigment from green algae of the genus *Caulerpa*, 842.

Cephalosporin antibiotics, chemistry of. Part XVI, configurational and conformational analysis of deacetoxy-Δ^2- and -Δ^3-cephalosporins and their corresponding sulphoxide isomers by nuclear magnetic resonance, 340.

***Cetraria islandica*,** biosynthesis of (+)-protolichesterinic acid in, 1848.

Chalcones, oxidative rearrangement of. Oxidative rearrangement of olefins by thallium(III) acetate. Part I, 119.

Chelates, metal, acylation of. Part V, the influence of electronic effects in the β-diketone ligand, 1172.

Chiograsterone and isochiograsterone, two new sterols from *Chionographis japonica* Maxim., structures of. Components of *Chionographis japonica* Maxim. Part IV, 910.
***Chionographis japonica* Maxim.**, components of. Part IV, structures of chiograsterone and isochiograsterone, two new sterols from *Chionographis japonica* Maxim., 910.
Chitin oligosaccharides, the preparation of, 1654.
Chlidanthine, structure and biosynthesis of, 1224.
Chlorine compounds. *N*-Acetyl-*N*-trichloromethylsulphenylarenesulphonamides, 225.
Addition of chlorine to the cyanogen bond. Chlorothio-(dichloroformimido)cyanamide, 875.
Aromatic nuclear chlorination by copper(II) chloride, 1982.
Cytotoxic compounds. Part X, carbamates derived from *NN*-bis-(2-chloroethyl)-*m*- and *NN*-bis-(2-chloroethyl)-*p*-phenylenediamine, 472. Part XI, enol carbamates derived from α-chloro-α-phenylacetophenone, 564.
Heterocyclic polyfluoro-compounds. Part XVIII, reaction of pentafluoropyridine with chlorine and with bistrifluoromethyl nitroxide, 55.
Nucleophilic elimination, substitution, addition, and cyclisation reactions of polychlorocyclopentadiene dimers, 1242.
Reactions of 1,3-dichloroacetone with phenols, 462.
Some pyrazolesulphenyl chlorides and derivatives, 78.
The minor anthraquinones of *Xanthoria parietina* (L.) Beltram, the chlorination of parietin, and the synthesis of fragilin and 7-chloro-emodin (' AO-1 '), 307.
The stereochemistry of β-chlorovinyl-aldehydes, 2484.
Chlorins. Formylation of ion(III) porphyrins and chlorins of natural origin, 903.
Cholestanes. 19-Nor and aromatic steroids Part I, the cleavage of 3-oxygenated-2β,19-ethers in the cholestane series, 1437.
Steroidal sulphur compounds. Part VII, pyrolysis and chiroptical properties of 3-alkylsulphinyl-5α-cholestanes, 833.
Steroids. Part IX, enamines from 6α-azidocholest-4-en-3-one and 2β-azidocholestan-3-one, 1188.
Steroids and Walden inversion. Part LXVII, substitution reactions of the 19-nor-5α-cholestan-2-ols, 2211. Part LXVIII, a re-examination of the substitution reactions of the 5α-cholestan-3-ols, 1124.
Studies in the steroid group. Part LXXX, preparation of 2- and 16-oxo-, and 3,16- and 2,16-dioxo-5α-androstane, and 2-oxo-5α-cholestane, 244.
Synthetic steroids. Part X, preparation of (3*S*)- and (3*R*)-spiro-[5α-cholestane-3,2′-oxiran] and their corresponding 2α-methyl and 2,2-dimethyl analogues, 731. Part XI, stereochemistry of the Tiffeneau–Demjanov ring expansion of 5α-cholestan-3-one, 736.
Cholest-5-enes, 3-substituted, a quantitative study of the epoxidation of. Hydroxy-steroids. Part XV, 2330.
Cholesterones. Reactions of Δ^7-steroids. Part III, conformational transmission effects in the methylation of 5β-cholest-7-en-3-one, 2117.
Steroids. Part IX, enamines from 6α-azidocholest-4-en-3-one and 2β-azidocholestan-3-one, 1188.
Steroids. Part XXXV, removal of the 4-methyl groups in 4,4,14α-trimethyl-steroids: conversion of lanosterol into 14α-methylcholest-4-en-3-one, 1443.
Cholesterol, 1α-hydroxy-, 1624.
Chromans, 3,4-disubstituted, the stereochemistry and reactions of some, 1006.
Chromium trioxide oxidation of some oestra-1,3,5[10], 9(11)-tetraenes. Aromatic steroids. Part IV, 1706.
Applications of chromium(II) chloride. Part V, the reduction of some nitro-steroids, 1182.
Cycloheptatriene and tropylium metal complexes. Part VI, tropone and alkoxycycloheptatriene complexes of carbonylchromium, 2315. Part VII, the preparation and ready ring contraction of tricarbonylcarbethoxytropyliumchromium, 2636. Part VIII, a study of directive effects in nucleophilic addition to substituted tricarbonyltropyliumchromiums, 2638.
Benzopyrones. Part I, 6-amino- and 6-hydroxy-2-substituted chromones, 2230. Part II, 7-hydroxy-4-oxochromen-2-carboxylic acid and some of its derivatives, 2609.
Pharmacologically active 4-oxo-4*H*-chromen-2-carboxylic acids (2-carboxy-chromones). Part I, the synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused thiazole ring, 1553. Part II, the synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused imidazole or oxazole ring, 2518.
Chrysanthemum*, *Artemisia*, and *Salvia species, biosynthesis of (+)- and (−)-camphor in. Terpene biosynthesis, Part III, 2694.
(+)-*trans*-Chrysanthemum mono- and di-carboxylic acids, ^{14}C-labelled, syntheses of, and of related compounds, 1076.
Chrysenes. Studies in photochemistry. Part VIII, the ultraviolet, proton magnetic resonance, and mass spectra, and photocyclisation of some styrylnaphthalenes to some benzo[*c*]phenanthrenes and chrysenes, 163.
Cinnolines. Part XIV, reductive formylation of cinnolines to 1-formamidoindoles, 1700.
substituted, the adducts of dimethylketen with. Keten. Part VIII, 1642.
***Cladophora rupestris*,** the water-soluble polysaccharides of. Part IV, autohydrolysis, methylation of the partly desulphated material, and correlation with the results from Smith degradation, 1561.
***Cleistanthus schlechteri*,** pimarane diterpenes from, 2536.
***Cochliobolus* (*Helminthosporium*) *sativus*,** a metabolite of, 9-hydroxyprehelminthosporol, 686.
Colupulone, some new products from the reaction of with persulphate, 1637.
Complexes, aluminium(III), of hydroxyflavones, in absolute methanol. Part I, ligands containing only one chelating site, 344.
Computer analysis of chemical reactions for storage and retrieval, 2082.
Analysis of structural characteristics of chemical compounds in a large computer-based file. Part I, non-cyclic fragments, 990.
Conformational transmission. Part II, the effect of a 7,8-double bond on the enol acetylation properties of 3-oxo-5β-steroids, 2121.
effects in the methylation of 5β-cholest-7-en-3-one. Reactions of Δ^7-steroids. Part III, 2117.
Conocarpin, a leucodrin-type metabolite of *Leucospermum conocarpodendron* (L.) Buek., 2127.
Cope rearrangement of some germacrane-type furan sesquiterpenes. Part I, 1142. Part II, relationship between conformations of carbocyclic ten-membered rings in germacrane-type furan sesquiterpenes and the stereochemistry of their Cope rearrangement products, 2697. Part III, rearrangement of *cis,trans*-cyclodeca-1,5-diene derivatives, 2704.

Copper(II) halides, reactions with organic compounds. Part VI, reactions of 9-alkyl- and 9-aryl-10-halogeno-anthracenes, 942.
Aromatic nuclear chlorination by copper(II) chloride, 1982.
Bromination of copper chelates of monoarylhydrazones of triketones, 1056.
Reactions of co-ordinated ligands. Part V, the mechanisms of the hydrolyses, ester-exchange reactions, deuteriations, and racemisation of the copper(II), zinc(II), magnesium(II), and palladium(II) complexes of *N*-(alkoxycarbonylalkyl)salicylideneimines, 1183.
Corrins. Thermal rearrangement of nickel 1-substituted tetradehydrocorrins, 1289.
Corydalis pallida var. tenuis (Yatabe), the alkaloids of, and the structures of pallidine and kikemanine, 1060.
Cotton effects of some ketones, influence of solvents upon. Optical rotatory dispersion. Part LXIV, 350.
Coumarino-lactone system, synthesis of: experiments directed towards a synthesis of aflatoxin-G2. Studies in mycological chemistry. Part XXV, 281.
Coumarins. Electrochemical reactions. Part VIII, asymmetric induction during the reduction of coumarins modified by the presence of tertiary amines, 2318.
Preparation and absolute configuration of the enantiomeric 3,4-dihydro-4-methylcoumarins, 2324.
Steric effects in the *C*-alkylation and ring expansion of coumarins by diazomethane, 897.
Croton species, alkaloids from. Part X, two new reduced proaporphine alkaloids, 1228.
Crystal structure and absolute configuration of the diterpenoid, methyl 6α-bromo-12-methoxy-7-oxopodocarpate, 887.
and molecular structure of hexaiodobenzene, 403.
circular dichroism, and nuclear magnetic resonance of 4α-bromo-5α-androst-2-ene,1,17-dione, 2111.
Reaction of picryl azide with *N*-methylindoles: the crystal structure of 1-methyl-2-picryliminoindoline, 956.
Cucurbitacins, 4,4,14α-trimethyl-19(10 → 9β)*abeo*-10α-pregn-5-enes from. Steroidal analogues of unnatural configuration. Part I, 1592.
Cyano-compounds. Chemistry of cyanoacetylenes. Part IV, preparation and reactions of cyano-ynamines and the corresponding cyano-enamines, 476.
Cyanogen bond, addition of chlorine to the. Chlorothio(dichloroformimido)cyanamide, 875.
Cyanogen-induced synthesis of ^{18}O-labelled β-ribofuranose 1-phosphate and its acid-catalysed hydrolysis, 1191.
Cyclisation of unsaturated bases derived by Hofmann degradation of perhydroazepines: a convenient synthesis of aza-steroids from steroidal ketoximes, 188.
oxidative, of ketone thiosemicarbazones. Part I, 4-methyl- and 4-aryl-thiosemicarbazones, 63. Part II, derivatives of phenoxyacetone, 323.
Cyclisations of 2- and 4-substituted 3-amino- and 3-nitropyridines. Synthesis of polynuclear heterocycles, Part II, 1874.
Cycloaddition, 1,3-dipolar, reactions, of cyanoacetylenes with *N*-ylides and *N*-imines. Chemistry of cyanoacetylenes. Part V, 481.
of dichloroketen to some steroid olefins, 1829.
Cyclobutane. Cation radicals: ring opening of a cyclobutane by electron transfer, 2508.
Cyclobuxine D and cyclobuxosuffrine, interconversion of. Buxus alkaloids. Part IX, 590.
Cyclobuxosuffrine and cyclobuxine D, interconversion of. Buxus alkaloids. Part IX, 590.
***cis,trans*-Cyclodeca-1,5-diene** derivatives, rearrangement of. Cope rearrangement of some germacrane-type furan sesquiterpenes. Part III, 2704.
Cycloheptatriene and tropylium metal complexes. Part VI, tropone and alkoxycycloheptatriene complexes of tricarbonylchromium, 2315. Part VII, the preparation and ready ring contraction of tricarbonylcarbethoxytropyliumchromium, 2636. Part VIII, a study of directive effects in nucleophilic addition to substituted tricarbonyltropyliumchromiums, 2638.
Cyclohepta-2,4,6-trienones, a synthesis of, 1230.
Cyclohexadienes, reactions of. Part VIII, stereoselective and non-stereoselective syntheses of (±)-juvabione, 1469.
Fluoro-olefins. Part VII, some thermal Diels–Alder reactions of perfluorocyclohexa-1,3-diene, 2539.
Cyclohexa-2,5-dienones, 4-hydroxy-, the photochemistry of some, 1607.
Cyclohexane series, 1-phenyl-4-t-butyl-, stereochemistry and mechanism of pinacol-type rearrangements in the, 1168.
Hypotensive amines: unbridged cyclohexane analogues of mecamylamine, 1845.
Cyclohexane-1,3-dione, 5,5-dimethyl-, (dimedone), experiments with. Anodic oxidation. Part X, 2175.
reaction of t-butylamine with, 1002.
Cyclohexanones, unhindered, reduction of, to axial alcohols in the presence of a soluble iridium–phosphite catalyst. Aspects of catalysis. Part I, 785.
Reactions of enamines with benzylidenecyclohexanone and benzaldehyde, 771.
Cyclohex-2-enones, 3-alkyl-5,5-dimethyl-, synthesis and structure of dienamines of. Factors affecting the formation and relative stability of *exo*- and *endo*-cyclic diene systems, 716.
Cyclohexyl derivatives, 1-methyl-, including steroid analogues, elimination reactions and configurations of, 182.
Cyclopentadienes, polyfluoro-. Part IV, reactions of perfluorocyclopentadiene with diethyl maleate and diethyl fumarate, 48. Part V, reaction of perfluorocyclopentadiene with *N*-allyltrifluoroacetamide, 201. Part VI, synthesis of 1- and 5-chloropentafluorocyclopentadiene, 2531.
Nucleophilic elimination, substitution, addition, and cyclisation reactions of polychlorocyclopentadiene dimers, 1242.
Rigid polycyclic systems. The reaction between cyclopentadiene and acenaphthylene and spectral properties of the adducts and derived alcohols and ketones, 596.
Cyclopentadienylidenecycloheptatriene, heterocyclic analogues of, derived from 1,3,4-oxadiazole and 1,2,4-triazole, 807.
heterocyclic analogues of, derived from pyridine, 800.
Cyclopentadithiophenones, synthesis of, 273.
Cyclopentane chemistry. Part I, some observations on 2-hydroxy-3-methylcyclopent-2-enone, 593.
Cyclopenta[*d*][1,2]oxazines and cyclopenta[*d*]pyridazines, 610.
Cyclopenta[*a*]phenanthrenes, potentially carcinogenic. Part IV, synthesis of 17-ketones by the Stobbe condensation, 1266.

Cyclopenta[*d*]pyridazines and cyclopenta[*d*][1,2]oxazines, 610.

Cyclopentenone, 2-hydroxy-, derivatives from photocyclisation of αβ-unsaturated 1,2-diketones: a suggested triplet biradical intermediate, 1193.

Cyclopropane. Pyrone series. Part XI, reactivity of 4,6-diaryl-2-pyrones and cyclopropane derivatives obtained from 2-pyrazolines, 1578.

tetrafluoro-, synthesis and derivatives of, 178.

Cyclotriveratrylene (10,15-dihydro-2,3,7,8,12,13-hexamethoxy-5*H*-tribenzo[*a*,*d*,*g*]cyclononene) chemistry of. Part II, bromination, 465.

Cysteine and *S*-benzylcysteine, synthesis of the α-hydroxy-analogues of, 2475.

and cystine peptides. Part V, *S*-trityl- and *S*-diphenylmethyl-cysteine and -cysteine peptides, 2683. Part VI, *S*-acylcysteines in peptide synthesis, 2687.

L-Cysteine sulphinic acid. Reduction of benzyl sulphonyl (sulphone) intermediates to sulphinic acids. Synthesis of hypotaurine and of L-cysteine and L-homocysteine sulphinic acids, 270.

Cytosine and 2-thiocytosine, direct synthesis of nucleosides of. Transfer RNA components. Part I. Nucleosides. Part X, 1109.

Cytotoxic compounds. Part X, carbamates derived from *NN*-bis-(2-chloroethyl)-*m*- and *NN*-bis-(2-chloroethyl)-*p*-phenylenediamine, 472. Part XI, enol carbamates derived from α-chloro-α-phenylacetophenone, 564.

D

Dahlia coccinea Cav. var. coccinea, Compositae, C_{14}-tetrahydropyranyl and other polyacetylenes from. Natural acetylenes. Part XXXI, 314.

Darzens condensation. Part I, effect of substituents on the acid-catalysed Darzens condensation, 1154.

9(11)-Dehydrohecogenin acetate, reactions of, with nitrous acid and with paraformaldehyde. Transformation of the steroidal sapogenin side chain. Part I, 1977.

Demethylaeruginosin B and aeruginosin B, the synthesis of. Pigments of *Pseudomonas* species. Part III, 2447.

Dendrolasin and torreyal, synthesis of. Addition of a functionalized isoprene unit to an allyl alcohol. Part II, 220.

Denticulatol. Syntheses of 2,4-dihydroxy- and 1,3-dihydroxy-8-methylphenanthrene-9,10-quinones and their bearing on the structure of denticulatol, 329.

Deuteriated anilines, phenols, and benzenethiols, use of trimethylsilyl derivatives in simple syntheses of, 1577.

Deuteriation and tritiation of aryl aldehydes in the formyl group and the synthesis of (±)-3,4-dihydroxy[β-$^2H_2$]-phenylalanine, 2049.

Studies related to the chemistry of melanins. Part IX, syntheses of specifically deuteriated 3,4-dihydroxyphenethylamines and (±)-3,4-dihydroxyphenylalanines, 1134.

Diazaindenes (azaindoles). Part II, thermal indolisation of 3- and 4-pyridylhydrazones, 303. Part III, reactions of Vilsmeier reagents leading to 3-formyl-1,6-diazaindene and -1,4-diazabenz[*f*]indene, 498.

Diazepines. Part XII, 6-nitro- and 6-amino-2,3-dihydro-1*H*-1,4-diazepinium salts, 617.

Diazoalkanes. Diazoketones from the interaction of diazoalkanes with carboxylic acid–dicyclohexylcarbodi-imide mixtures, 971.

10-Diazoanthrone, thermally induced reactions of, with alkanes, 1851.

Diazoketones from the interaction of diazoalkanes with carboxylic acid–dicyclohexylcarbodi-imide mixtures, 971.

Diazomethane, steric effects in the *C*-alkylation and ring expansion of coumarins by, 897.

Diazonium salts derived from 7-amino-1,2,3-benzothiadiazoles, a novel rearrangement of. 1,2,3-Benzothiadiazoles. Part II, 2514.

Dibenz[*c*,*g*]azecin-14(13*H*)-one, 5,6,7,8-tetrahydro-7-methyl-, synthesis of: the structural skeleton of the protopine alkaloids, 2578.

Dibenzoazarsepine. Synthesis of some nitrogen–arsenic heterocycles: 5,10-dihydro-5,10-*o*-benzenophenarsazine (azarsatriptycene), 10,11-dihydro-5-phenyl-5*H*-dibenzo-[*b*,*f*][1,4]azarsepine, and 2,3-dihydro-1,2-diphenyl-1*H*-benz[*c*]azarsole, 158.

Dibenzo[*a*,*c*]benzo[3,4]cyclobuta[1,2-*f*]cyclo-octene, synthesis of, 2137.

Dibenzo[*b*,*h*][1]benzopyrano[2,3,4-*de*][1,6]naphthyridines and their molecular orientation in carcinogenesis. Cyclic amidines. Part XXIII, 2647.

Dibenzo[*b*,*h*]biphenylene, two syntheses of, 2162.

Dibenzo]*b*,*f*][1,4]-diazocine, 5,6,11,12-tetrahydro-, ring-substituted derivatives of, 1161.

Dibenzo[*a*,*h*]quinolizines, synthesis of some, 2184.

Dicyclohexylcarbodi-imides. Diazoketones from the interaction of diazoalkanes with carboxylic acid–dicyclohexylcarbodi-imide mixtures, 971.

Diels–Alder reactions, some thermal, of perfluorocyclohexa-1,3-diene. Fluoro-olefins. Part VII, 2539.

Dienes, steroidal 1(10),9(11)-, and ring A aromatic steroids, reactions of arynes with. Steroids and arynes. Part III. Aryne chemistry. Part XXVI, 2493.

Elimination of nitriles in retro-diene reactions, 552.

Enamine chemistry. Part VII, synthesis and structure of dienamines of 3-alkyl-5,5-dimethylcyclohex-2-enones. Factors affecting the formation and relative stability of *exo*- and *endo*-cyclic diene systems, 716.

Dimedone (5,5-dimethylcyclohexane-1,3-dione), experiments with. Anodic oxidation. Part X, 2175.

Dimroth rearrangement. Part XII, transformation by alkali of 4-amino-3-benzyl-1,2,3-triazole and its 5-substituted derivatives into the corresponding 4-benzylamino isomers. Retrogression of this reaction in neutral solvents, 230.

Diols. Phytotoxic compounds produced by *Fusarium equiseti*. Part IV, fission of trichothecan-3α,4β-diols by manganese dioxide, 369. Part VI, 4β,8α,15-triacetoxy-12,13-epoxytrichothec-9-ene-3α,7α-diol, 378.

Diospyros quiloensis, methoxynaphthaldehydes as constituents of the heartwood of, and their synthesis by the Stobbe condensation, 626.

1,4-Dioxans, halogeno-, and their derivatives. Part V, bi-1,3-dioxan-2-yl and 2,3,4aα,10aα-tetrahydrobenzo[*b*]-*p*-dioxino[2,3-*e*]-*p*-dioxin, 2457.

Dioxaphenalene. The structure and synthesis of barakol: a novel dioxaphenalene derivative from *Cassia siamea*, 1686.

1,3-Dioxolans, 2,2,4-trisubstituted; structural assignments of some, 263.

Diphenylamine and 2-bromonitrobenzene, copper catalysed reaction between. Metal ions and complexes in organic reactions. Part XII, 1973.

Di-2-pyridyl ketone, radical cations from diquaternary salts of, 2394.

Dithioles. Studies of heterocyclic compounds. Part VIII, direct conversion of 4*H*-thiopyran-4-thiones into 6a-thiathiophthens and 3-arylmethylene-3*H*-1,2-dithioles, 2412.

The dithiole series. Part IV, syntheses of dithiolylidene ketones and 1,6,6aS(IV)-trithiapentalenes from dithiolylium salts and of analogous compounds from pyrylium and thiopyrylium salts, 1202.

Dopamine-melanin, studies on the structure of. Studies related to the chemistry of melanins. Part XIII, 2063.

Dyes, anthraquinone. Part V, a contribution to the study of the Marschalk reaction. Nuclear methylation of 1-aminoanthraquinone leuco-derivative, 567. Part VI, nuclear alkylation of 1-aminoanthraquinone leuco-derivative, 570.

Dyestuff, phenol, of Liebermann, as an acridan derivative, 2462.

Dynopinacol (2-hydroxy-6-methyl-2,4,6-triphenylcyclohex-3-enyl phenyl ketone) and related compounds, 817.

E

Ecdysone, the insect moulting hormone, and related compounds, a synthesis of, 1584.

Edulinine, synthesis of. (+)-Platydesminium salt and other alkaloids from *Skimmia japonica* Thunb. Quinoline alkaloids. Part X, 556.

Electrochemical reactions. Part VIII, asymmetric induction during reduction of coumarins modified by the presence of tertiary amines, 2318.

Electrolysis. Anodic oxidation. Part VIII, electrolysis of dimethyl sodiomalonate in hexamethylphosphoric triamide, 1153. Part IX, electrolysis of ethyl sodiomethylacetoacetate, 1317.

Elemic resin, clarification of the nature of the tetracyclic triterpene acids of. The chemistry of triterpenes and related compounds. Part XLVII, 739.

Elimination reactions and configurations of 1-methylcyclohexyl derivatives, including steroid analogues, 182.

Elsinoe species, pigments of. Part III, methylation of elsinochrome A. Formation of mono- and di-methyl ethers, 2152. Part IV, confirmatory evidence for the structure of elsinochrome A and its ethers from studies of nuclear magnetic resonance (solvent and Overhauser effects) and electron spin resonance, 2154. Part V, the structure of elsinochrome D, 2159.

Emodin, 7-chloro-, (' AO-1 '), and fragilin, synthesis of, the minor anthraquinones of *Xanthoria parietina* (L.) Beltram, and the chlorination of parietin, 307.

Enamines, acylation of, with phosgene, and the synthesis of heterocycles, 881.

from 6α-azidocholest-4-en-3-one and 2β-azidocholestan-3-one. Steroids. Part IX, 1188.

reactions of, with benzaldehyde and benzylidenecyclohexanone, 771.

related to pethidine, 1074.

some reactions of. Part II, some alkylation reactions of the pyrrolidine enamines of 3,4-dihydronaphthalen-1(2*H*)-one and 6,7,8,9-tetrahydro-5*H*-benzocyclohepten-5-one, 35.

Chemistry of cyanoacetylenes. Part IV, preparation and reactions of cyano-ynamines and the corresponding cyano-enamines, 476.

Enamine chemistry. Part VII, synthesis and structure of dienamines of 3-alkyl-5,5-dimethylcyclohex-2-enones. Factors affecting the formation and relative stability of *exo*- and *endo*-cyclic diene systems, 716. Part VIII, reaction of acryloyl chloride with dienamines, 1477.

Vinylamines. Part IX, reaction of cyclohexanone enamines with αβ-unsaturated ketones, 2377.

Enol carbamates derived from α-chloro-α-phenylacetophenone. Cytotoxic compounds. Part XI, 564.

Entandrophragma cylindricum Sprague, triterpenoids from. Part I, structures of sapelins A and B, 311.

Epoxides and iodohydrins from olefins, 846.

quinone. Part VI, the synthesis and stereochemistry of terremutin, 1945.

stereochemistry of reduction by borohydride anion, 928.

Hydrocyanation. Part X, cleavage of epoxides with hydrogen cyanide and triethylaluminium and with diethylaluminium cyanide, 2365.

The acid-catalysed ring opening of 5,6-epoxides in a largely non-aqueous medium. Hydroxy-steroids. Part XIV, 2325.

Trihalogenomethyl compounds of potential therapeutic interest. Part VIII, synthesis of some epoxides, amides, alcohols, and acetylenic amines, 94.

9,11-Epoxy-5,7-dienes, pyrolysis of maleic anhydride and maleic ester adducts of. Steroids. Part XIII, 508.

5β-Ergosta-7,22-dien-3-one and related compounds. Hydroxy-steroids. Part XIII, 1052.

Erysodienone formation *in vitro*, the mechanism of. Phenol oxidation and biosynthesis. Part XX, 1208.

Erythina alkaloids, biosynthesis of the. Phenol oxidation and biosynthesis. Part XXI, 1213.

Erythrophleum guineense a minor constituent from the bark of, cassminic acid, 1703.

Erythroxylon monogynum Roxb., constituents of. Part VI, unusual oxidation reactions, 2023.

Esters, acetylenic, condensation of, with ethyl phenylacetates, 2056.

amino-acid 4-methoxybenzyl, 964.

Ester exchange in ethyl *N*-substituted-4-hydroxy-5-oxo-3-pyrroline-3-carboxylates, 715.

Ethanes, diaryl-, and diarylethylenes, asymmetric, reactions with. Part XIII, rearrangements of 1,1-dihalogeno-2,2-diarylethanes and the corresponding 1-halogenoethylenes in boiling ethylene glycol, alone or in the presence of sodium 2-hydroxyethoxide, 409. Part XIV, addition of xanthenyl chloride to the ethylenes, 1923.

Ethers, aromatic, and aromatic hydrocarbons, photochemical reactions of boron halides with. Organoboron compounds. Part VII, 485.

Ethylene glycol. Reactions with asymmetric diarylethanes and diarylethylenes. Part XIII, rearrangements of 1,1-dihalogeno-2,2-diarylethanes and the corresponding 1-halogenoethylenes in boiling ethylene glycol, alone or in the presence of sodium 2-hydroxyethoxide, 409.

Ethylenes—*see also* Olefins.

diaryl-, and diarylethanes, asymmetric, reactions with. Part XIII, rearrangements of 1,1-dihalogeno-2,2-diarylethanes and the corresponding 1-halogenoethylenes in boiling ethylene glycol, alone or in the presence of sodium 2-hydroxyethoxide, 409. Part XIV, addition of xanthenyl chloride to the ethylenes, 1923.

some iodophenyl- and iodothienyl(thienyl)-, photochemical cyclisation of, 2504.

Ethylenes (*contd.*)
Free-radical additions to unsaturated systems. Part XVII, reaction of trifluoroiodomethane with mixtures of ethylene and vinyl fluoride and of ethylene and propene, 414.
Heterocyclic studies. Part XIII, ready ring cleavage of some pyrimidine derivatives to give highly substituted ethylenes, 494.
Tetra-acetylethylene: a new intermediate for synthesising heterocyclic rings, 1536.
Ethyl α-methylacetoacetate, oxidation with lead dioxide, 1320.
Ethyl sodiomethylacetoacetate, electrolysis of. Anodic oxidation. Part IX, 1317.
Etianic acids (androstane-17-carboxylic acids) and related compounds, low temperature circular dichroism of. Optical rotatory dispersion and circular dichroism. Part LXVIII, 2417.

F

Ferrocenes. Organometallic derivatives. Part I, heteroannularly substituted trimethylsilylferrocenes, 1789.
Flavan-3,4-diols, novel, from *Acacia cultriformis*, 1800.
Flavones, hydroxy-, the aluminium(III) complexes of, in absolute methanol. Part I, ligands containing only one chelating site, 344. Part II, ligands containing more than one chelating site, 1309.
Fluorene and acenaphthene, iodination of, with iodine–peracetic acid, 1689.
and xanthen derivatives, formation of, by competitive 1,4- and 1,3-cycloadditions of quinonylmethyl anions to quinones, 722.
The nuclear halogenation of fluorene, fluorenone, acenaphthene, and acenaphthenequinone by *N*-bromosuccinimide and *N*-chlorosuccinimide, 1737.
Fluorescein, 5- and 6-amino-, reaction paths to pure. Pitfalls encountered in conventional synthesis procedures, 654.
Fluorine compounds. Addition of free radicals to unsaturated systems. Part XVIII, the direction of radical addition to 1,3,3,3-tetrafluoropropene, 1750.
Aromatic polyfluoro-compounds. Part XLIX, nucleophilic replacement reactions of 2,3,4,5,6-pentafluorostyrene, 1271.
Difluorimide chemistry. Part I, reactions of difluoroamino-alcohols, 1104. Part II, tris[(difluoroamino)-methyl]amine, 1106. Part III, replacement reactions, 1108.
Fluorination of dichloromaleic anhydride with sulphur tetrafluoride, 2429.
Fluorodiphenylphosphine, 878.
Fluoro-olefins. Part VII, some thermal Diels–Alder reactions of perfluorocyclohexa-1,3-diene, 2539.
Heterocyclic polyfluoro-compounds. Part XVIII, reaction of pentafluoropyridine with chlorine and with bistrifluoromethyl nitroxide, 55. Part XIX, synthesis of and nucleophilic substitution in some 2,4,6-trifluoropyrimidines; formation of trifluoromethylpyrimidines by pyrolysis of tetrafluoropyrimidine, 1280.
Highly fluorinated heterocycles. Part III, the preparation and reactions of some polyfluorofurans, 2146.
Homolytic reactions of perfluoroaromatic compounds. Part II, reactions of perfluorobenzoyl peroxide with aromatic compounds, 1260.
Mass spectral studies. Part VII, unusual fragmentation of some *N*-trifluoroacetyl amino-acid methyl esters, 116.
Organophosphorus chemistry. Part IX, reaction of dimethyl- and bis(trifluoromethyl)phosphines with olefins, 197. Part X, reaction of dimethyl- and bis(trifluoromethyl)-phosphines with trifluoroethylene, 744.
Organosilicon chemistry. Part VI, the photochemical reaction of bis(trimethylsilyl)mercury with hexafluorobenzene and with trimethyl(pentafluorophenyl)silane, 2193.
Polyfluoroarenes. Part X, polyfluoroaromatic azo-compounds, 449. Part XI, reactions of tetrafluorophthalonitrile with nucleophilic reagents, 456. Part XII, some azoxy-compounds and benzotriazoles, 1519. Part XIII, further homolytic reactions of polyfluoroiodobenzenes, 2187. Part XIV, synthesis of halogenophthalocyanines, 2667.
Polyfluorocyclopentadienes. Part IV, reactions of perfluorocyclopentadiene with diethyl maleate and diethyl fumarate, 48. Part V, reaction of perfluorocyclopentadiene with *N*-allyltrifluoroacetamide, 201. Part VI, synthesis of 1- and 5-chloropentafluorocyclopentadiene, 2531.
Polyfluoroheterocyclic compounds. Part XVII, preparation and nucleophilic substitution of tetrafluoropyrazine and the orientational effect of substituents in polysubstitution, 1023.
Studies in azide chemistry. Part III, polyfluorinated azides from 1*H*- and 2*H*-pentafluoropropene and perfluorobut-2-yne, 2172.
Synthesis and derivatives of tetrafluorocyclopropene, 178.
Fluorosulphonic acid. 1-Hydroxyindoles, and products from the reaction of 2-nitrophenylsuccinic anhydride with fluorosulphonic acid, 1067.
Folic acid, quinazoline analogues of, 997.
Formamide, light-induced reactions of, with acetylenes, 893.
Formylation of iron(III) porphyrins and chlorins of natural origin, 903.
Fragilin and 7-chloro-emodin (' AO-1 '), synthesis of, the minor anthraquinones of *Xanthoria parietina* (L.) Beltram, and the chlorination of parietin, 307.
Free radicals: ring opening of a cyclobutane by electron transfer, 2508.
Addition of dichlorocarbene to some acyclic trienes, 2000.
Free-radical addition reactions of pin-2-ene, pin-2(10)-ene, and thuj-4(10)-ene, 258.
Free-radical additions to unsaturated systems. Part XVII, reaction of trifluoroiodomethane with mixtures of ethylene and vinyl fluoride and of ethylene and propene, 414. Part XVIII, the direction of radical addition to 1,3,3,3-tetrafluoropropene, 1750.
Free-radical reactions of halogenated bridged polycyclic compounds. Part X, addition of bromine and chlorine to hexachloronorbornadiene, 659.
Heterocyclic polyfluoro-compounds. Part XVIII, reaction of pentafluoropyridine with chlorine and with bistrifluoromethyl nitroxide, 55.
Nitroxide radicals. Part VIII, stability of *ortho*-alkyl-substituted phenyl t-butyl nitroxides, 1277.
Radical cations from diquaternary salts of di-2-pyridyl ketone, 2394.
Friedel–Crafts acylations of aromatic hydrocarbons. Part VIII, mono- and di-acylation of mesitylene, 517.
reactions, anomalous: synthesis of benzophenones, 937.
Fries rearrangement of *ortho*-halogenophenyl acetates, 2596.

Fucoxanthin, conversion into paracentrone. Carotenoids and related compounds. Part XXVII, 241.
Fumarate, diethyl, and diethyl maleate, reactions of perfluorocyclopentadiene with. Polyfluorocyclopentadienes. Part IV, 48.
Furans, polyfluoro-, the preparation and reactions of some. Highly fluorinated heterocycles. Part II, 2146.
Addition of a functionalized isoprene unit to an allyl alcohol. Part II, reactions with furylmethanol and thienylmethanol and synthesis of torreyal and dendrolasin, 220.
Fusarenone and nivalenol, structures of. Transformation products of 4β,15-diacetoxy-3α,7α-dihydroxy1-2,13-epoxytrichothec-9-en-8-one. Phytotoxic compounds produced by *Fusarium equiseti*. Part V, 375.
Fusarium equiseti, phytotoxic compounds produced by. Part IV, fission of trichothecan-3α,4β-diols by manganese dioxide, 369. Part V, transformation products of 4β,15-diacetoxy-3α,7α-dihydroxy-12,13-epoxytrichothec-9-en-8-one and the structures of nivalenol and fusarenone, 375. Part VI, 4β,8α,15-triacetoxy-12,13-epoxytrichothec-9-ene-3α,7α-diol, 378.
Fusarubin, *o*-demethylanhydro-. New metabolites of *Gibberella fujikuroi*. Part XIV, 930.

G

Galanthamine and narwedine, an oxidation product of, 592.
Gamboge. Part IV, scission of gambogic acid by alkali, 2459.
Gelsemine. The alkaloids of *Gelsemium sempervirens*. Part IV, derivatives of pyridine, isoquinoline, and indol-2(3*H*)-one as possible initial materials for synthesis of gelsemine, 796.
Gelsemium sempervirens, alkaloids of. Part III, sempervirine, 791. Part IV, derivatives of pyridine, isoquinoline, and indol-2(3*H*)-one as possible initial materials for synthesis of gelsemine, 796.
Geneserine, the absolute configuration of; an application of the nuclear Overhauser effect. Alkaloids of *Physostigma venenosum*. Part IX, 2077.
Germacrane-type furan sesquiterpenes, Cope rerrangement of some. Part I, 1142. Part II, relationships between conformations of carbocyclic ten-membered rings in germacrane-type furan sesquiterpenes and the stereochemistry of their Cope rearrangement products, 2697. Part III, rearrangement of *cis,trans*-cyclodeca-1,5-diene derivatives, 2704.
Gibberella fujikuroi, new metabolites of. Part XIV, *O*-demethylanhydrofusarubin, 930. Part XV, *N*-jasmonoyl- and *N*-dihydrojasmonoyl–isoleucine, 1839.
***ent*-Gibberellane,** photo-oxygenation studies of some derivatives of, 1341.
Gibberic acid, inversion of ring D of, 71.
Glycerol esters of thiobenzoic *O*-acid and thioglycerol esters of benzoic acid, 467.
***C*-Glycosyl** compounds. Part VI, aloesin, a *C*-glycosylchromone from *Aloe* sp., 2581.
β-Glycyrrhetic acid. The preparation and chemical properties of some glycuronyl esters of β-glycyrrhetic acid (3β-hydroxy-11-oxo-olean-12-en-30-oic acid) and its derivatives, 2038.
Grignard reagents and lithium reagents, stereochemistry of reaction with phenyl- and methyl-propiolic acids, 1380.
Organotin chemistry. Part V, structure of the dialkyltin methoxide halides in solution: an analogy with the Grignard reagent, 821.
Grisan, three isomeric derivatives, from the oxidative cyclisation of benzylidenebis-2-naphthol. Spirans. Part VII, 1557.
Guanidines and -benzamidines, some iodomethylsulphonyl-, synthesis and ring closure of. α-Amino-sulphonic acid derivatives. Part II, 1429.
Heterocyclic compounds from urea derivatives. Part XVIII, adducts from aminoguanidines and aroyl isothiocyanates and their cyclisation, 1805. Part XIX, adducts from diaminoguanidines and aroyl isothiocyanates and their cyclisation, 1813.
Sequential attack by a diketone on a polyhydrazine; the reaction of triaminoguanidine with acetylacetone, 2510.
Gums. Plant gums of the genus *Khaya*. Part IV, major component of *Khaya ivorensis* gum, 361. Part V, further studies on *Khaya senegalensis* gum, 365.
Plant gums of the genus *Sterculia*. Part IV, acidic oligosaccharides from *Sterculia urens* gum, 2256. Part V, degradation of carboxy-reduced *Sterculia urens* gum, 2259.
Guttiferae, extractives from. Part XVI, biogenetic-type synthesis of xanthones from their benzophenone precursors, 392.

H

Halogen compounds. Aryne chemistry. Part XXVII, the photolysis of 1,2-di-iodotetrafluorobenzene in the presence of benzene, 2569.
Defluorination reactions by aluminium chloride and methyl iodide. Part I, halogenofluoroethanes, 949.
Free-radical additions to unsaturated systems. Part XVII, reaction of trifluoroiodomethane with mixtures of ethylene and vinyl fluoride and of ethylene and propene, 414.
Free-radical reactions of halogenated bridged polycyclic compounds. Part X, addition of bromine and chlorine to hexachloronorbornadiene, 659.
Halogen–metal exchange reactions with 2-halogenoalkylsilicon compounds, 1740.
Halogeno-1,4-dioxans and their derivatives. Part V, bi-1,3-dioxan-2-yl and 2,3,4aα,10aα-tetrahydrobenzo[*b*]-*p*-dioxino[2,3-*e*]-*p*-dioxin, 2457.
Mechanism of oxidative ring closure of compounds of the buta-1,3-diene-1-thiol type with halogens to give thiophen derivatives, 914.
Metalation and halogen–metal exchange in 3-arylthiophens, 1464.
Metal ions and complexes in organic reactions. Part XI, reactions in pyridine between copper species and aryl halides, in particular between copper(I) oxide and 2-bromonitrobenzene, 1967.
Optical rotatory dispersion and circular dichroism. Part LXVI, 2-halogenoalkanes, 1329.
Organoboron compounds. Part VII, photochemical reactions of boron halides with aromatic hydrocarbons and aromatic ethers, 485.
Photochemical phenylation and oxidation of halogen-substituted diphenylmethanes in benzene, 2586.
Polyfluoroarenes. Part XIV, synthesis of halogenophthalocyanines, 2667.

Halogen (*contd.*)
Polyhalogenoaromatic compounds. Part XI, some reactions of 2,3,5,6-tetrachloro-4-mercapto- and 2,3,5,6-tetrachloro-4-methylthiopyridine, 193. Part XII, synthesis and cycloaddition reactions of pentafluoro- and pentachloro-benzonitrile *N*-oxide, 1165. Part XIII, the reduction of pentachloropyridine and derivatives with lithium aluminium hydride and other complex metal hydrides, 1375. Part XIV, nucleophilic substitution and peroxy-acid oxidation of pentabromopyridine and some of its *NN*-dialkylamino- and bis-(*NN*-dialkylamino)-derivatives, 1523. Part XV, preparation and reactions of tetrachloropyridine-4-sulphenyl chloride and tetrachloropyridine-4-sulphonyl chloride, 1530.
Pyrimidines. Part XXIII, synthesis of pyrimido[4,5-*b*]-[1,4]oxazines by reaction of 4,5-diaminopyrimidine derivatives with α-halogenoketones, 437.
Reactions of copper(II) halides with organic compounds. Part VI, reactions of 9-alkyl- and 9-aryl-10-halogenoanthracenes, 942.
Reactions of tetrahalogeno-1,2-benzoquinones. Part III, reaction of tetrachloro-1,2-benzoquinone with tetralones and naphthols: pathway to the condensates, 1257.
Reactions with asymmetric diarylethanes and diarylethylenes. Part XIII, rearrangements of 1,1-dihalogeno-2,2-diarylethanes and the corresponding 1-halogenoethylenes in boiling ethylene glycol, alone or in the presence of sodium 2-hydroxyethoxide, 409.
Studies in azide chemistry. Part II, photolysis of 2*H*-hexafluoropropyl and 2-chloro-1,1,2-trifluoroethyl azide, 1017.
Synthesis of azine perhalide adducts, 2674.
Synthesis of *N*-α-chlorobenzylidene-*N'*-(2,4- and 4,2-halogenoiodophenyl)hydrazines and their reaction with thioacetate ion, 2106.
Synthesis of *N*-halogeno-*N*-sodioalkanesulphonamides, 2087.
The Fries rearrangement of *ortho*-halogenophenyl acetates, 2596.
The reaction of dimethylketen with some acid halides, 2522.
Trihalogenomethyl compounds of potential therapeutic interest. Part VIII, synthesis of some epoxides, amides, alcohols, and acetylenic amines, 94. Part IX, miscellaneous reactions, 101.
Halogens. The nuclear halogenation of fluorene, fluorenone, acenaphthene, and acenaphthenequinone by *N*-bromosuccinimide and *N*-chlorosuccinimide, 1737.
Helminthosporium monoceras, metabolites of: structures of monocerin and related benzopyrans, 2598.
Heterocycles, highly fluorinated. Part III, the preparation and reactions of some polyfluorofurans, 2146.
oxygen. Part XVI, oxo-derivatives of a new heterocyclic system: 2*H*-naphth[1,8-*bc*]oxepin, 1327.
polynuclear, synthesis of. Part II, cyclisations of 2- and 4-substituted 3-amino- and 3-nitro-pyridines, 1874.
Acylation of enamines with phosgene and the synthesis of heterocycles, 881.
Addition reactions of heterocyclic compounds. Part XLII, the mechanism of the thermal rearrangement of tetramethyl 7,9-dimethyl-9a*H*-quinolizine-1,2,3,4-tetracarboxylate to the 4*H*-isomer, 1301.
Diborane as a reducing agent. Part III, the reduction of oxygen heterocyclic carbonyl compounds and aromatic esters, and the catalytic action of boron trifluoride, 1667.
Heterocyclic analogues of cyclopentadienylidenecycloheptatriene derived from 1,3,4-oxadiazole and 1,2,4-triazole, 807.
Heterocyclic analogues of cyclopentadienylidenecycloheptatriene derived from pyridine, 800.
Heterocyclic compounds from urea derivatives. Part XVI, interaction of carbonohydrazide and carbodiimides, 19. Part XVII, reactions of 1-phenylcarbonohydrazide and 1-phenylthiocarbonohydrazide with carbodi-imides, 26. Part XVIII, adducts from aminoguanidines and aroyl isothiocyanates and their cyclisation, 1805. Part XIX, adducts from diaminoguanidines and aroyl isothiocyanates and their cyclisation 1813.
Heterocyclic polyfluoro-compounds. Part XVIII, reaction of pentafluoropyridine with chlorine and with bistrifluoromethyl nitroxide, 55. Part XIX, synthesis of and nucleophilic substitution in some 2,4,6-trifluoropyrimidines; formation of trifluoromethylpyrimidines by pyrolysis of tetrafluoropyrimidine, 1280.
Heterocyclic studies. Part XIII, ready ring cleavage of some pyrimidine derivatives to give highly substituted ethylenes, 494.
Heterocyclic syntheses. Part XXIII, synthesis and reactions of 2,3-dihydrobenzimidazoles, 825.
Homolytic substitution of heteroaromatic compounds. Part II, homolytic methylation of pyridine, quinoline, and isoquinoline in acidic and non-acidic media, 2169.
peri-Naphthotriazines and related compounds. Part II, some acenaphthylene derivatives; their preparation and properties, 290. Part III, some photochemical reactions: synthesis of 1-methylacenaphtho[5,6-*bc*]pyridine, 298.
Novel heterocyclic spirobenzofurans, 931.
Polyfluoroheterocyclic compounds. Part XVII, preparation and nucleophilic substitution of tetrafluoropyrazine and the orientational effect of substituents in polysubstitution, 1023.
Reactivity of Mannich bases. Part XII, ring alkylation of aromatic and heterocyclic compounds, 1157.
Some novel heterocyclic systems related to benzocycloheptene, 327.
Studies of heterocyclic compounds. Part VII, thioformylindolizines, 145. Part VIII, direct conversion of 4*H*-thiopyran-4-thiones into 6a-thiathiophthens and 3-acylmethylene-3*H*-1,2-dithioles, 2412.
Studies on heterocyclic chemistry. Part VII, thermally induced dimerization of 5-aminoisoxazoles and 2*H*-azirines and photochemistry of 5-aminoisoxazoles, 1825.
Studies on the syntheses of heterocyclic compounds. Part CCCXIII, phenolic oxidative coupling of a dihydroxy-1-phenethyl-1,2,3,4-tetrahydroisoquinoline, 922.
Syntheses of heterocyclic compounds. Part II, *N*-arylazoles by Ullmann condensation, 85.
Synthesis of heterocyclic compounds. A cyclisation involving a lactam nitrogen in a derivative of isoquinolin-3-one, 2245.

Heterocycles (*contd.*)
Synthesis of some nitrogen–arsenic heterocycles: 5,10-dihydro-5,10-*o*-benzenophenarsazine(azarsatriptycene), 10,11-dihydro-5-phenyl-5*H*-dibenzo[*b*,*f*][1,4]azarsepine, and 2,3-dihydro-1,2-diphenyl-1*H*-benz[*c*]azarsole, 158.
Tetra-acetylethylene: a new intermediate for synthesising heterocyclic rings, 1536.
Hexafluorobenzene and trimethyl(pentafluorophenyl)silane, the photochemical reaction of bis(trimethylsilyl)mercury with. Organosilicon chemistry. Part VI, 2193.
1,2,4,6,7,11b-Hexahydrobenzo[*a*]quinolizin-3-one, synthesis of, and of some related compounds, 150.
***cis*-Hexahydrocarbazoles,** 3-substituted, configurational isomers of, 1.
Hexaiodobenzene, crystal and molecular structure of, 403.
Hofmann degradation of perhydroazepines, cyclisation of unsaturated bases derived by: a convenient synthesis of aza-steroids from steroidal ketoximes, 188.
Homoadamantanes. Adamantane chemistry. Part I, some intramolecular ring expansion reactions of adamantan-2-one; the synthesis of 4-substituted homoadamantanes, 671.
Homoandrostanes. Pyrolysis of 17-oxygenated 16-methylene-20-oxosteroids. Part III, preparation and pyrolysis of 17α-acetoxy-17β-methyl-16-methylene-17a-oxo-D-homoandrostanes, 1352.
L-Homocysteine sulphinic acid. Reduction of benzyl sulphonyl (sulphone) intermediates to sulphinic acids. Synthesis of hypotaurine and of L-cysteine and L-homocysteine sulphinic acids, 270.
Homolytic aromatic substitution. Part XXXIV, major products from the reaction of benzoyl peroxide with *p*-disubstituted benzenes, 2653.
reactions of perfluoroaromatic compounds. Part II, reactions of perfluorobenzoyl peroxide with aromatic compounds, 1260.
substitution of heteroaromatic compounds. Part II, homolytic methylation of pyridine, quinoline, and isoquinoline in acidic and non-acidic media, 2169.
Homoproaporphines, configuration and rearrangement of, 382.
Hormones, two insect juvenile, and their isomers, convenient syntheses of, 2631.
A synthesis of the insect moulting hormone, ecdysone, and related compounds, 1584.
Hydrazides. Sulphonohydrazides and related compounds. Part XII, some arylsulphonyl derivatives of carbonohydrazide and related hydrazides, 2629.
Hydrazines, 1,2-dialkyl-, a simple unequivocal synthesis of, 1714.
reduction of nitrosamines to, 1088.
An infrared spectroscopic method of distinguishing isomeric disubstituted hydrazines as salts, 2707.
Hydrazine derivatives. Part II, oxidation of aldehyde *NN*-disubstituted hydrazones with lead tetra-acetate, 1494.
Sequential attack by a diketone on a polyhydrazine; the reaction of triaminoguanidine with acetylacetone, 2510.
Synthesis of *N*-α-chlorobenzylidene-*N*′-(2,4- and 4,2-halogenoiodophenyl)hydrazines and their reaction with thioacetate ion, 2106.
Hydrazonates, alkyl, synthesis and properties of, 968.
Hydrazones, 3- and 4-pyridyl-, thermal indolisation of. Diazaindenes (azaindoles). Part II, 303.
aroyl-, substituted, mass spectra of. Mass spectrometry of organic compounds. Part V, 2574.
NN-disubstituted aldehyde, oxidation of, with lead tetra-acetate. Hydrazine derivatives. Part II, 1494.
oxidation of, by lead tetra-acetate, 1033.
Bromination of copper chelates of monoarylhydrazones of triketones, 1056.
Oxidation of phenylglyoxal dihydrazones to phenyl-1,2,3-triazoles, 2167.
Preparation and reactions of ethyl 4-bromo-2,3-dioxobutyrate 2-arylhydrazones and 4-bromo-2,3-dioxo-1-phenylbutanal 2-arylhydrazones, 656.
Hydrocarbons, aromatic, and aromatic ethers, photochemical reactions of boron halides with. Organoboron compounds. Part VII, 485.
aromatic, Friedel–Crafts acylations of. Part VIII, mono- and di-acylation of mesitylene, 517.
Hydrocyanation. Part VIII, conjugate hydrocyanation of steroidal αβ-unsaturated carboxylic acid derivatives, 2347. Part IX, synthesis of β-cyano-aldehydes by conjugate hydrocyanation of allylideneamines followed by hydrolysis, 2355. Part X, cleavage of epoxides with hydrogen cyanide and triethylaluminium and with diethylaluminium cyanide, 2365.
Hydroxamic acids, *N*-aryl-, oxidation of. Mode of action of carcinogenic amines. Part I, 1081.
hindered *N*-aryl-, from arylamines *via* nitroso-compounds, 2497.
6β-Hydroxygedunin, 421.
Hydroxylamine hydrochloride, reactions of β-diketones with; synthesis of 3,5-disubstituted isoxazoles, 947.
Hypotaurine, and L-cysteine and L-homocysteine sulphinic acids, synthesis of. Reduction of benzyl sulphonyl (sulphone) intermediates to sulphinic acids, 270.

I

Imidazoles, purines, and pyrimidines. Part XXXIII, synthesis of 5-methylsulphonyluridine and its 5′-mono- and pyro-phosphates, 2016. Part XXXIV, synthesis and some reactions of *N*(6)-(formylmethyl)adenine, 2206.
Pharmacologically active 4-oxo-4*H*-chromen-2-carboxylic acids. Part II, the synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused imidazole or oxazole ring, 2518.
Imidazoquinolines and indolin-2(3*H*)-ones, syntheses of. Synthetic uses of polyphosphoric acid and its ethyl ester. Part II, 829.
Imides. Difluorimide chemistry. Part I, reactions of difluoroamino-alcohols, 1104. Part II, tris[(difluoroamino)methyl]amine, 1106. Part III, replacement reactions, 1108.
Imido chlorides. Addition of chlorine to the cyanogen bond. Chlorothio(dichloroformimido)cyanamide, 875.
***N*-Imines** and *N*-ylides, 1,3-dipolar cycloaddition reactions of cyanoacetylenes with. Chemistry of cyanoacetylenes. Part V, 481.
Imines. Photolysis of t-butyl-substituted *p*-benzoquinone mono- and di-imine derivatives, 2604.
Indanes. Circular dichroism and optical rotatory dispersion of some hexahydroindanone derivatives; methyl- and methylene-substituted steroid ketones, 423.

Indanes (*contd.*)
Overcrowded molecules. Part IV, thermal and photochemical electrocyclic reactions of *trans*-2-benzylidene-1-diphenylmethyleneindane and its 3-methyl derivative, 399. Part V, stereochemistry and stereospecific photochemical rearrangement reaction of 1,2-bisdiphenylmethylene-3-methylindane, 873.
cis- and *trans*-2-Substituted 1-methylindanes, 920.
Indenes. Synthesis of 3-(2-aminoethyl)-5-hydroxyindene, the indene isostere of 5-hydroxytryptamine, 114.
Indoles, 1-formamido-, reductive formylation of cinnolines to. Cinnolines. Part XIV, 1700.
1-hydroxy-, and products from the reaction of 2-nitrophenylsuccinic anhydride with fluorosulphonic acid, 1067.
2-methyl-, rearrangement of *N*-(2-bromoallyl)-arylamines to, 74.
Reaction of picryl azide with *N*-methylindoles: the crystal structure of 1-methyl-2-picryliminoindoline, 956.
Reductive amination of substituted indole-2,3-diones, 550.
Studies related to the chemistry of melanins. Part VII, attempts to synthesise hydroxylated bi-indolyls, biphenyls, and indoline-2-carboxylic acid as possible intermediates in the formation of melanins from 3,4-dihydroxyphenethylamine and 3,4-dihydroxyphenylalanine, 865.
Synthetic uses of polyphosphoric acid and its ethyl ester. Part II, syntheses of indolin-2(3*H*)-ones and imidazoquinolines, 829.
The alkaloids of *Gelsenium sempervirens*. Part IV, derivatives of pyridine, isoquinoline, and indol-2(3*H*)-one as possible initial materials for synthesis of gelsemine, 796.
Indolizines thioformyl-. Studies of heterocyclic compounds. Part VII, 145.
Oxidation of methyl 2-hydroxy-3-methyl- and methyl 2-hydroxy-3-phenylindolizine-1-carboxylates, 1434.
Indophenine, a reinvestigation of the structure of. Some new evidence, 2264.
Inositol. A novel aromatisation reaction of derivatives of 1,2-*O*-isopropylidene-*myo*-inositol, 2253.
Insecticides, potential, synthesis of. Part II, carbamic esters of 4-alkylthiopyrazolones, 445. Part III, carbamic esters of 3-cyano-4-hydroxy-thiophens and -pyrroles, 2409.
Intermediates, reactive. Part X, synthesis of aziridines from amino-nitrenes and olefins, 576. Part XI, the generation and some reactions of benzynequinone, 583.
Iodine compounds. Benziodazoles: synthesis for bioactivity studies, 862.
Crystal and molecular structure of hexaiodobenzene, 403.
Iodination and iodo-compounds. Part III, iodination of some aromatic nitro-compounds with iodine in 20% oleum, 1480.
Photochemical cyclisation of some iodophenyl- and iodothienyl(thienyl)ethylenes, 2504.
Polyfluoroarenes. Part XIII, further homolytic reactions of polyfluoroiodobenzenes, 2187.
Reactions of iodonium nitrate with some alcohols, 676.
Iodine. Iodination of acenaphthene and fluorene with iodine–peracetic acid, 1689.
Iodohydrins and epoxides from olefins, 846.
Iridium–phosphite catalyst, soluble, reduction of unhindered cyclohexanones to axial alcohols in the presence of. Aspects of catalysis. Part I, 785.
Irigenin and tectorigenin. Synthesis of isoflavones. Part V, 1219.
Iron. Formylation of iron(III) porphyrins and chlorins of natural origin, 903.
Organometallic derivatives. Part I, heteroannularly substituted trimethylsilylferrocenes, 1789.
o-Quinonoid compounds. Part II, 1,4-diphenyl-2-benzopyran-3-one and its iron carbonyl complexes, 530.
Stable carbonium ions. Part I, 2-ferrocenylnorbornan-2-yl cation, 2552. Part II, the properties of 1-ferrocenyl-3-arylallyl cations, 2556.
Isochiograsterone and chiograsterone, two new sterols from *Chionographis japonica* Maxim., structures of. Components of *Chionographis japonica* Maxim. Part IV, 910.
Isocyanates, and carbodi-imides, insertion reactions of titanium alkoxides with, 132.
Isodocarpin, chemical conversion of oridonin into. Terpenoids. Part XVI, 1681.
Isodon japonicus and, ***Isodon trichocarpus*** structure and absolute configuration of oridonin isolated from. Terpenoids. Part XV, 1674.
Isoflavones, synthesis of. Part V, irigenin and tectorigenin, 1219.
synthesis of. Oxidative rearrangement of olefins by thallium(III) acetate. Part II, 125.
Isohumulones, *cis*- and *trans*-tetrahydro-, 524.
Isoindole, 1-oxo-, cations, 1600.
1,3,4,7-tetramethyl-, the chemistry of, and a route to the tetrabenzporphryin system, 1251.
Isoleucine, *N*-jasmonoyl-, and *N*-dihydrojasmonoyl-. New metabolites of *Gibberella fujikuroi*. Part XV, 1839.
Isoline and bisline, two new alkaloids from *Senecio othonniformius* Fourcade, suggested structures for. The *Senecio* alkaloids, 2312.
Isomerism. Valence-bond isomer chemistry. Part I, the valence-bond isomers of hexakis(trifluoromethyl)- and hexakis(pentafluoroethyl)-benzenes, 1232.
Isopemptoporphyrin, pemptoporphyrin and protoporphyrin IX dimethyl esters, syntheses of, 1928.
Isophthalaldehyde, 4,6-dihydroxy-, and the 5-methyl and 5-methoxy-derivatives, synthesis of, 227.
Isoprenes. Addition of a functionalized isoprene unit to an allyl alcohol. Part II, reactions with furylmethanol and thienylmethanol and synthesis of torreyal and dendrolasin, 220.
1,2,-*O*-Isopropylidene-*myo*-inositol, a novel aromatisation reaction of derivatives of, 2253.
Isoquinolines, 1,2-dihydro-. Part XIII, synthesis of sanguinarine chloride, 1797.
Abnormal products of the Pschorr reaction of 8-amino-1,2,3,4-tetrahydro-1-phenethylisoquinoline, 2209.
Homolytic methylation of isoquinoline, quinoline and pyridine in acidic and non-acidic media. Homolytic substitution of heteroaromatic compounds. Part II, 2169.
Phenolic oxidative coupling of a dihydroxy-1-phenethyl-1,2,3,4-tetrahydro-isoquinoline. Studies on the syntheses of heterocyclic compounds. Part CCCXIII, 922.
Synthesis and stereochemistry of 1,2,3,4-tetrahydro-6-methoxy-2-methyl-1-phenylisoquinoline and related compounds, 2213.
Synthesis of heterocyclic compounds. A cyclisation involving a lactam nitrogen in a derivative of isoquinolin-3-one, 2245.

Isoquinolines (*contd.*)
The alkaloids of *Gelsemium sempervirens*. Part IV, derivatives of pyridine, isoquinoline, and indol-2(3*H*)-one as possible initial materials for synthesis of gelsemine, 796.
Isothiocyanates. Heterocyclic compounds from urea derivatives. Part XVIII, adducts from aminoguanidines and aroyl isothiocyanates and their cyclisation, 1805. Part XIX, adducts from diaminoguanidines and aroyl isothiocyanates and their cyclisation, 1813.
Isoxazoles, 3,5-disubstituted, synthesis of; reactions of β-diketones with hydroxylamine hydrochloride, 947.
Studies on heterocyclic chemistry. Part VII, thermally induced dimerization of 5-aminoisoxazoles and 2*H*-azirines and photochemistry of 5-aminoisoxazoles, 1825.
Itaconic acids, γγ-disubstituted. Part V, Stobbe condensation of phenyl, *p*-anisyl, and *p*-chlorophenyl isopropyl ketones with diethyl succinate, 620.

J

Japp–Klingemann reactions. Cleavage of 2-acetyl-2-phenylazopropionanilide and related compounds by boron trifluoride, 1986.
N-Jasmonoyl- and *N*-dihydrojasmonoyl–isoleucine. New metabolites of *Gibberella fujikuroi*. Part XV, 1839.
Juniperus, *Thuja*, and *Tanacetum* species, biosynthesis of thujane derivatives in. Terpene biosynthesis. Part II, 2689.
(±)-Juvabione, stereoselective and nonstereoselective syntheses of. Reactions of cyclohexadienes. Part VIII, 1469.

K

Keten. Part VIII, the adducts of dimethylketen with substituted cinnolines, 1642. Part IX, the reaction of dimethylketen with some benzodiazines, 1651.
dichloro-, cycloaddition of, to some steroid olefins, 1829.
dimethyl-, reaction with some acid halides, 2522.
Ketones, alcohols, and acetates in the androstane, pregnane, and oestrane series, proton magnetic resonance spectra of. Microbiological hydroxylation of steroids. Part I, 250.
α-aryloxy-, photolysis of, 155.
α-halogeno-, synthesis of pyrimido[4,5-*b*][1,4]oxazines by reaction of 4,5-diaminopyrimidine derivatives with. Pyrimidines. Part XXIII, 437.
α-hydroxyimino-, configuration of, 1049.
α-methylene-, preparation of quinolines from, 2488.
αβ-unsaturated, reaction of cyclohexanone enamines with. Vinylamines. Part IX, 2377.
Acylation of metal chelates. Part V, the influence of electronic effects in the β-diketone ligand, 1172.
Bromination of copper chelates of monoarylhydrazones of triketones, 1056.
γγ-Disubstituted itaconic acids. Part V, Stobbe condensation of phenyl, *p*-anisyl, and *p*-chlorophenyl isopropyl ketones with diethyl succinate, 620.
Dynopinacol (2-hydroxy-6-methyl-2,4,6-triphenylcyclohex-3-enyl phenyl ketone) and related compounds, 817.
2-Hydroxycyclopentenone derivatives from photocyclisation of αβ-unsaturated 1,2-diketones: a suggested triplet biradical intermediate, 1193.
Optical rotatory dispersion. Part LXIV, influence of solvents upon the Cotton effects of some ketones, 350. Part LXV, circular dichroism and optical rotatory dispersion of some hexahydroindanone derivatives; methyl- and methylene-substituted steroid ketones, 423.
Photochemistry of some non-conjugated unsaturated 1,2-diketones, 1197.
Reactions of β-diketones with hydroxylamine hydrochloride; synthesis of 3,5-disubstituted isoxazoles, 947.
Rigid polycyclic systems. The reaction between cyclopentadiene and acenaphthylene and spectral properties of the adducts and derived alcohols and ketones, 596.
Sequential attack by a diketone on a polyhydrazine; the reaction of triaminoguanidine with acetylacetone, 2510.
Synthesis of 17-ketones by the Stobbe condensation. Potentially carcinogenic cyclopenta[*a*]phenanthrenes. Part IV, 1266.
Tetra-acetylethylene: a new intermediate for synthesising heterocyclic rings, 1536.
The dithiole series. Part IV, syntheses of dithiolylidene ketones and 1,6,6aS(IV)trithiapentalenes from dithiolylium salts and of analogous compounds from pyrylium and thiopyrylium salts, 1202.
Ketoximes, steroidal, a convenient synthesis of aza-steroids from: cyclisation of unsaturated bases derived by Hofmann degradation of perhydroazepines, 1880.
Khaya anthotheca (Welw.) C.D.C., limonoids from, 205.
Khaya ivorensis gum, major compoent of. Plant gums of the genus *Khaya*. Part IV, 361.
limonoid extractives from, 1710.
Khaya madagascariensis Jumelle et Perrier, limonoids from, 336.
Khaya senegalensis gum, further studies on. Plant gums of the genus *Khaya*. Part V, 365.
Kikemanine. The alkaloids of *Corydalis pallida* var. tenuis (Yatabe) and the structures of pallidine and kikemanine, 1060.

L

Lactam nitrogen in a derivative of isoquinolin-3-one, a cyclisation involving. Synthesis of heterocyclic compounds, 2245.
Lambertellin, synthesis of. Naturally occurring quinones. Part XVII, 109.
Lanostan-3β-yl acetate, 11β-hydroxy-, simultaneous functionalization of the angular 10- and 13-methyl groups in, by oxidation with lead tetra-acetate–iodine. Terpenoids. Part LXVI, 1089.
Lanosterol. Steroids. Part XXXV, removal of the 4-methyl groups in 4,4,14α-trimethyl-steroids: conversion of lanosterol into 14α-methylcholest-4-en-3-one, 1443.
Lansbury synthesis, application to the preparation of tetrahydro-1-benzazepin-3-ones. Azabenocycloheptenones. Part XII, 2191.
Lauraceae plants, sesquiterpenes of. Part I, components of *Neolitsea aciculata* Koidz., 973. Part II, neosericenine, a component of the leaf of *Neolitsea sericea* Koidz., 1547.
Laureline, and related topics, an aryne route to, 2234.
Lead dioxide, the oxidation of ethyl α-methylacetoacetate with, 1320.

Lead (*contd.*)
tetra-acetate, functionalization and cleavage of adamantane with; the formation of 2(3→4)*abeo*-adamantane from adamantane, 2124.
on the oxidation of hydrazones by, 1033.
oxidation of aldehyde *NN*-disubstituted hydrazones with. Hydrazine derivatives. Part II, 1494.
reactions of. Part XX, oxidation of 2,4,6-tri-t-butylphenol, 728.
Leonotis species, diterpenoids of. Part III, 8β-hydroxymarrubiin from *L. dysophylla* Benth., 1656.
Leucospermum conocarpodendron (L.) Buek. Conocarpin, a leucodrin-type metabolite of *Leucospermum conocarpodendron* (L.) Buek., 2127.
Lichens. Portentol: an unusual polypropionate from the lichen *Roccella portentosa*, 1612.
Liebermann reaction. The phenol dyestuff of Liebermann as an acridan derivative, 2462.
Ligands containing only one chelating site. The aluminium(III) complexes of hydroxy-flavones in absolute methanol, 344.
co-ordinated, reactions of. Part V, the mechanisms of the hydrolyses, ester-exchange reactions, deuteriations, and racemisation of the copper(II), zinc(II), magnesium(II), and palladium(II) complexes of *N*-(alkoxycarbonylalkyl)salicylideneimines, 1183.
Acylation of metal chelates. Part V, the influence of electronic effects in the β-diketone ligand, 1172.
Liguloxide, hydroxylation of, with *Mucor parasiticus* Bain. Microbial transformation of sesquiterpenoids. Part II, 2548.
Limonene, the pinenes and linalyl and nerolidyl acetates, reactions of with disodium tetrachloropalladate(II). Complexes of terpenes with transition metals. Part II, 2200.
Limonoids from *Khaya anthotheca* (Welw.) C.D.C., 205.
from *Khaya ivorensis*, 1710.
from *Khaya madagasceriensis* Jumelle et Perrier, 336.
from *Xylocarpus granatum* Koenig, 211.
Chemical shifts of the tertiary methyl groups in the nuclear magnetic resonance spectra of some limonoids. Part II, 2396.
Structure of the limonoid triterpene zapoterin, 694.
Linalyl acetate and nerolidyl acetate, limonene, and the pinenes, reactions of with disodium tetrachloropalladate(II). Complexes of terpenes with transition metals. Part II, 2200.
Lincomycin, synthesis of, 2218.
Lithium and Grignard reagents, stereochemistry of reaction with phenyl- and methyl-propiolic acids, 1380.
reaction of, with trialkyl borates. Organoboron compounds. Part X, 2228.
Aromatic substitution. Part XXV, reaction of 3-picoline with some substituted phenyl-lithium derivatives, 128.
Condensed thiophen ring systems. Part IV, synthesis, reactions, and stability of 2-phenyl-3-benzo[*b*]thienyllithium and related compounds, 2592.
Lobeline, biosynthesis of, 2470.
***Lolium perenne* L.,** (perennial rye-grass), the alkaloids of. Part IV, isolation of a new base, perlolyrine; the crystal structure of its hydrobromide dihydrate, and the synthesis of the base, 1091.
Lupane series, dehydrogenation with mercuric acetate in. Part III, a revised structure for dehydrolupeol derivatives, 1030.

M

Magnesium. Reactions of co-ordinated ligands. Part V, the mechanisms of the hydrolyses, ester-exchange reactions, deuteriations, and racemisation of the copper(II), zinc(II), magnesium(II) and palladium(II) complexes of *N*-(alkoxycarbonylalkyl)salicylideneimines, 1183.
Maleate, diethyl, and diethyl fumarate, reactions of perfluorocyclopentadiene with. Polyfluorocyclopentadienes. Part IV, 48.
Maleic anhydride and maleic ester adducts of 9,11-epoxy-5,7-dienes, pyrolysis of. Steroids. Part XIII, 508.
dichloro-, fluorination of, with sulphur tetrafluoride, 2429.
Novel analgesics and molecular rearrangements in the morphine-thebaine group. Part XVII, compounds related to the thebaine-maleic anhydride adduct, 560.
Malonate, dimethyl sodio-, in hexamethylphosphoric triamide, electrolysis of. Anodic oxidation. Part VIII, 1153.
Malononitrile derivatives, formation of, in the reaction of tetracyanoethylene with *NN*-dialkylanilines, 1394.
Mannich bases, reactivity of. Part XII, ring alkylation of aromatic and heterocyclic compounds, 1157. Part XIII, mechanism of the reaction between aminomethylnaphthols and benzenethiols, 1866.
condensation of tropolones, 1323.
reactions in high-boiling solvents, 1549.
Marrubiin, 8β-hydroxy-, from *L. dysophylla* Benth. Diterpenoids of *Leonotis* species. Part III, 1656.
Marschalk reaction, a contribution to the study of. Nuclear methylation of 1-aminoanthraquinone leuco-derivative. Anthraquinone dyes. Part V, 567.
Melanins, studies related to the chemistry of. Part VI, syntheses of 3-carboxypyrrole-2-acetic acid, 3,5-dicarboxypyrrole-2-acetic acid, and related compounds, 285. Part VII, attempts to synthesise hydroxylated biindolyls, biphenyls and indoline-2-carboxylic acid as possible intermediates in the formation of melanins from 3,4-dihydroxyphenethylamine and 3,4-dihydroxyphenylalanine, 865. Part VIII, the pyrrolecarboxylic acids formed by oxidation or hydrolysis of melanins derived from 3,4-dihydroxyphenethylamine or (±)-3,4-dihydroxyphenylalanine, 1128. Part IX, syntheses of specifically deuteriated 3,4-dihydroxyphenethylamines and (±)-3,4-dihydroxyphenylalanines, 1134. Part X, quantitative assessment of different types of units present in dopa-melanin, 1409. Part XI, the distribution of the polymeric linkages in dopa-melanin, 1418. Part XII, some spectroscopic experiments regarding intermediates in melanogenesis, 1664. Part XIII, studies on the structure of dopamine-melanin, 2063.
Meliacins. The conversion of turraeanthin and turraeanthin A into simple meliacins by a route involving an oxidative rearrangement of probable biogenetic importance, 2280.
Melibiose, acetyl derivatives of. The reaction of ammonia with acylated disaccharides. Part IX, 1908.
4-Mercaptopyridine, 2,3,5,6-tetrachloro-, and 2,3,5,6-tetrachloro-4-methylthiopyridine, some reactions of. Polyhalogenoaromatic compounds. Part XI, 193.
Mercury. Dehydrogenation with mercuric acetate in the lupane series. Part III, a revised structure for dehydrolupeol derivatives, 1030.
Organometallic oxides, alkoxides, and peroxides. Part III, phenylmercury(II) alkoxides, 2051.

Mercury (*contd.*)
Organosilicon chemistry. Part VI, the photochemical reaction of bis(trimethylsilyl)mercury with hexafluorobenzene and with trimethyl(pentafluorophenyl)silane, 2193.
Mesitylene, mono- and di-acylation of. Friedel–Crafts acylations of aromatic hydrocarbons. Part VIII, 517.
Metabolites, new, of *Gibberella fujikuroi*. Part XIV, *O*-demethylanhydrofusarubin, 930. Part XV, *N*-jasmonoyl- and *N*-dihydrojasmonoyl-isoleucine, 1839.
of *Helminthosporium monoceras*: structures of monocerin and related benzopyrans, 2598.
Concocarpin, a leucodrin-type metabolite of *Leucospermum conocarpodendron* (L.) Buek., 2127.
Metabolic products of *Stemphylium radicinum*. Part III, biosynthesis of radicinin and pyrenophorin, 1860.
Syntheses of pemptoporphyrin, isopemptoporphyrin and protoporphyrin IX dimethyl esters, 1928.
The biosynthesis of phenols. Part XXI, the molecular structure of arugosin, a metabolite of a wild-type strain of *Aspergillus rugulosus*, 1175.
Versimide, a metabolite of *Aspergillus veriscolor*, 2572.
Metals. Metal ions and complexes in organic reactions. Part XI, reactions in pyridine between copper species and aryl halides, in particular between copper(I) oxide and 2-bromonitrobenzene, 1967. Part XII, copper-catalysed reaction between 2-bromonitrobenzene and diphenylamine, 1973. Part XIII, oxidative effects of silver(II) complexes of pyridinecarboxylic acids, 1975.
γ-Metasantonin, the stereochemistry of. Chemistry of santonene. Part V, 2012.
Methylation, nuclear, of 1-aminoanthraquinone leuco-derivative. A contribution to the study of the Marschalk reaction. Anthraquinone dyes. Part V, 567.
Microbial modification of mycophenolic acid, 1725.
transformation of sesquiterpenoids. Part II, hydroxylation of liguloxide with *Mucor parasiticus* Bain, 2548.
Monocerin and related benzopyrans, structures of: metabolites of *Helminthosporium monoceras*, 2598.
Monocrotalic acid, the absolute configuration at C-2 in. Pyrrolizidine alkaloids, 1334.
Morphine-thebaine group, novel analgesics and molecular rearrangements in. Part XVII, compounds related to the thebaine-maleic anhydride adduct, 560.
***Mucor parasiticus* Bain,** hydroxylation of liguloxide with. Microbial transformation of sesquiterpenoids. Part II, 2548.
Mycological chemistry, studies in. Part XXIV, synthesis of ochratoxin A, a metabolite of *Aspergillus ochraceus* Wilh., 278. Part XXV, experiments directed towards a synthesis of aflatoxin-G2: synthesis of the coumarino-lactone system, 281.
Mycophenolic acid, microbial modification of, 1725.
Myrcene and *cis*- and *trans*-ocimene, reactions of, with palladium(II). Complexes of terpenes with transition metals. Part I, 2196.

N

Naphthaldehydes, methoxy-, as constituents of the heartwood of *Diospyros quiloensis* and their synthesis by the Stobbe condensation, 626.
Naphthalenes. Some reactions of enamines. Part II, some alkylation reactions of the pyrrolidine enamines of 3,4-dihydronaphthalen-1(2*H*)-one and 6,7,8,9-tetrahydro-5*H*-benzocyclohepten-5-one, 35.
Studies in photochemistry. Part VIII, the ultraviolet, proton magnetic resonance, and mass spectra, and photocyclisation of some styrylnaphthalenes to some benzo[*c*]phenanthrenes and chrysenes, 163.
The chemistry of the benz[*cd*]indazole system. Benz[*cd*]-indazole 1-oxide, benz[*cd*]indazole 1,2-dioxide (1,8-dinitrosonaphthalene), and related compounds, 1693.
Naphthalene-3,6-disulphonic acid, diazotised 1-amino-8-hydroxy-, self coupling of, 693.
Naphthols, aminomethyl-, and benzenethiols, mechanism of the reaction between. Reactivity of Mannich bases. Part XIII, 1866.
2-Naphthol derivatives from 1,1-dichloronaphthalen-2(1*H*)-one, 1701.
Reactions of tetrahalogeno-1,2-benzoquinones. Part III, reaction of tetrachloro-1,2-benzoquinone with tetralones and naphthols: pathway to the condensates, 1257.
Naptho[2,1-*b*]pyrans, 1,3- and 3,3-bis(methoxyphenyl)-, 1758.
1,4-Naphthoquinones, thiosemicarbazone and amidinohydrazone derivatives of some, 1993.
***peri*-Naphthotriazines** and related compounds. Part II, some acenaphthylene derivatives; their preparation and properties, 290. Part III, some photochemical reactions: synthesis of 1-methylacenaphtho[5,6-*bc*]pyridine, 298.
2*H*-Naphth[1,8-*bc*]oxepin: a new heterocyclic system, oxo-derivatives of. Oxygen heterocycles. Part XVI, 1327.
Narwedine and galanthamine, an oxidation product of, 592.
***Neolitsea aciculata* Koidz.,** components of. Sesquiterpenes of *Lauraceae* plants. Part I, 973.
***Neolitsea sericea* Koidz.,** a component of the leaf of, neosericenine. Sesquiterpenes of *Lauraceae* plants. Part II, 1547.
Neosericenine, a component of the leaf of *Neolitsea sericea* Koidz. Sesquiterpenes of *Lauraceae* plants. Part II, 1547.
Nerolidyl acetate and linalyl acetate, limonene, and the pinenes, reactions of, with disodium tetrachloropalladate(II). Complexes of terpenes with transition metals. Part II, 2200.
Nickel 1-substituted tetradehydrocorrins, thermal rearrangement of, 1289.
Nigericin (polyetherin A), studies on the antibiotic, 695.
Nitramides and nitramines. Part XV, some novel nitro-compounds prepared during a search for *N*-nitrohydrazines, 1784.
Nitramines and nitramides. Part XV, some novel nitro-compounds prepared during a search for *N*-nitrohydrazines, 1784.
Nitrate esters as intermediates in the oxidation of toluenes by ammonium cerium(IV) nitrate, 1630.
Nitration and bromination of 2,3-dibromobenzo[*b*]thiophen and its 5-methyl derivative. Substitution reactions of benzo[*b*]thiophen derivatives. Part I, 1949.
Nitrenes. Part VI, reaction of 6′-nitropapaverine and its analogue with triethyl phosphite, 380.
amino-, and olefins, synthesis of aziridines from. Reactive intermediates. Part X, 576.
Nitriles, elimination of, in retro-diene reactions, 552.
Nitro-compounds, some aromatic, iodination with iodine in 20% oleum. Iodination and iodo-compounds. Part III, 1480.

Nitro-compounds (*contd.*)
Mechanism of the conversion of 2-nitrobenzyl systems into 2,1-benzisoxazoles, 2660.
Metal ions and complexes in organic reactions. Part XI, reactions in pyridine between copper species and aryl halides, in particular between copper(I) oxide and 2-bromonitrobenzene, 1967. Part XII, copper catalysed reaction between 2-bromonitrobenzene and diphenylamine, 1973.
Nitramines and nitramides. Part XV, some novel nitro-compounds prepared during a search for *N*-nitrohydrazines, 1784.
Nitrene. Part VI, reaction of 6′-nitropapaverine and its analogue with triethyl phosphite, 380.
o-Nitroaniline derivaives. Part I, the preparation and stability of *o*-nitroanils, 2145.
Nucleophilic substitution at bivalent sulphur. Part II, trans-sulphenylation reactions of γ-hydroxyalkyl 2-nitrobenzenesulphenates, 2142.
Reduction of nitro- and nitroso-compounds by tervalent phosphorus reagents. Part VII, a new synthesis of phenothiazines involving a new molecular rearrangement, 2437. Part VIII, syntheses of benzimidazoles and anthranils, 2441.
Selective reduction of nitroaromatic compounds, 435.
Thermal decomposition of t-butyl2-nitrobenzenesulphenate, 60.
Nitrogen compounds, carcinogenic. Part LXVIII, a new class of pseudoazulenes: [1]benzoselenino[4,3-*b*]indoles, 1058.
containing carbohydrate derivatives. Part XXIII, some ring-opening reactions of methyl 2,3-*N*-aroylepimino-4,6-*O*-benzylidene-2,3-dideoxy-α-D-mannopyranosides, 843.
Synthesis of some nitrogen-arsenic heterocycles: 5,10-dihydro-5,10-*o*-benzenophenarsazine(azarsatriptycene), 10,11-dihydro-5-phenyl-5*H*-dibenzo[*b*,*f*][1,4]azarsepine, and 2,3-dihydro-1,2-diphenyl-1*H*-benz[*c*]azarsole, 158.
Nitrones, *N*-(methylthiomethyl), some reactions of. Reactions of diaryl oximes with dimethyl sulphoxide-dicyclohexylcarbodi-imide-acid, 1718.
Nitro-paraffins, chemistry of. Part LXXXVIII, diastereoisomeric derivatives of 5-ethyl-5-nitrotetrahydro-1,3-oxazines, 1004.
2-Nitrophenylsuccinic anhydride. 1-Hydroxyindoles, and products from the reaction of 2-nitrophenylsuccinic anhydride with fluorosulphonic acid, 1067.
***o*-Nitrophenylsulphenyl thiocyanate,** a stable reagent for the preparation of *N*-*o*-nitrophenylthio-amino-acids, 2180.
Nitrosamines, reduction of, to hydrazines, 1088.
Nitroso-compounds, aromatic, a new method of preparing. The reaction between nitrosyl chloride and aryltrimethylstannanes, 1717.
hindered *N*-arylhydroxamic acids from arylamines *via*, 2497.
in solution, photoreaction of. Part XIV, reactions of amido-radicals, 1138.
oxidation of substituted anilines to, 1433.
A convenient synthesis of 2-methyl-2-nitrosopropane (' t-nitrosobutane '), 2195.
Reduction of nitro- and nitroso-compounds by tervalent phosphorus reagents. Part VII, a new synthesis of phenothiazines involving a new molecular rearrangement, 2437. Part VIII, syntheses of benzimidazoles and anthranils, 2441.
Nitro-steroids, the reduction of some. Applications of chromium(II) chloride. Part V, 1182.
Nitrous acid, and paraformaldehyde, reactions of 9(11)-dehydrohecogenin acetate with. Transformation of the steroidal sapogenin side chain. Part I, 1977.
Nitroxide radicals. Part VIII, stability of *ortho*-alkyl-substituted phenyl t-butyl nitroxides, 1277.
Heterocyclic polyfluoro-compounds. Part XVIII, reaction of pentafluoropyridine with chlorine and with bistrifluoromethyl nitroxide, 55.
Nivalenol and fusarenone, structures of. Transformation products of 4β,15-diacetoxy-3α,7α-dihydroxy-12,13-epoxytrichothec-9-en-8-one. Phytotoxic compounds produced by *Fusarium equiseti*. Part V, 375.
Norbornadiene, hexachloro-, addition of bromine and chlorine to. Free-radical reactions of halogenated bridged polycyclic compounds. Part X, 659.
Norbornene disulphoxides, stereomutations at the sulphur atom in. Neighbouring-group participation by sulphinyl-oxygen. Part III, 572.
formation and decomposition of Δ^2-triazolines derived from. The chemistry of azidotropones. Part III, 1935.
19-Nor-5α-cholestanes, 2-hydroxy-, preparation of the epimeric. Steroids. Part XXXV, 1893.
Nordrimenone, a revised structure for, 203.
***exo*- and *endo*-17-Norkauran-16-ol** and 17-norphyllocladan 16-ol, buffered acetolyses of the toluene-*p*-sulphonates of, 1148.
17-Norphyllocladan-16-ol and 17-norkauran-16-ol, buffered acetolyses of the toluene-*p*-sulphonates of, 1148.
Nucleophilic character of acyl radicals. Homolytic acylation of quinoxaline, 929.
displacement reactions in carbohydrates. Part XIV, the reaction of 2,3-*O*-isopropylidene-5,6-bis-*O*-methylsulphonyl-α-D-mannofuranose with sodium methoxide: a route to L-allose derivatives, 1273. Part XV, displacements with 1,2:5,6-di-*O*-isopropylidene-3-*O*-*p*-tolylsulphonyl-β-L-talofuranose, 1632.
elimination, substitution, addition, and cyclisation reactions of polychlorocyclopentadiene dimers, 1242.
reagents, reactions of tetrafluorophthalonitrile with. Polyfluoroarenes. Part XI, 456.
replacement reactions of 2,3,4,5,6-pentafluorostyrene. Aromatic polyfluoro-compounds. Part XLIX, 1271.
substitution and peroxy-acid oxidation of pentabromopyridine and some of its *NN*-dialkylamino- and bis(*NN*-dialkylamino)-derivatives. Polyhalogeno-aromatic compounds. Part XIV, 1523.
and preparation, of tetrafluoropyrazine and the orientational effect of substituents in polysubstitution. Polyfluoroheterocyclic compounds. Part XVII, 1023.
at bivalent sulphur. Part II, trans-sulphenylation reactions of γ-hydroxyalkyl 2-nitrobenzenesulphenates, 2142.
reactions of some 1,2:5,6-di-*O*-isopropylidene-3-*O*-tosyl-α-D-hexoses with potassium thiobenzoate, rates of. Thio-sugars. Part V, 712.
Nucleosides. Part X. Transfer RNA components. Part I, direct synthesis of nucleosides of cytosine and 2-thiocytosine, 1109.
pyrimidine. Part IV, reactions of 3-(β-D-ribofuranosyl)-uracils, 1365. Part V, reactions of 3-(β-D-ribofuranosyl)uracils and related compounds, 1869.

O

Ochratoxin A, a metabolite of *Aspergillus ochraceus*. Wilh, synthesis of. Studies in mycological chemistry. Part XXIV, 278.

***cis* and *trans*-Ocimene** and myrcene, the reactions of, with palladium(II). Complexes of terpenes with transition metals. Part I, 2196.

Oestranes. Microbiological hydroxylation of steroids. Part I, proton magnetic resonance spectra of ketones, alcohols, and acetates in the androstane, pregnane and oestrane series, 250.

Oestra-1,3,5(10),9(11)-tetraenes, chromium trioxide oxidation of some. Aromatic steroids. Part IV, 1706.

Oestrone: experiments in steroid synthesis, 10.

Oleanolic acid. Conversion of α- and β-amyrin into ursolic and oleanolic acids respectively. A synthesis of oleanolic acid, 678.

Olefins—*see also* Ethylenes.

and amino-nitrenes, synthesis of aziridines from. Reactive intermediates. Part X, 576.

fluoro-. Part VII, some thermal Diels–Alder reactions of perfluorocyclohexa-1,3-diene, 2539.

iodohydrins and epoxides from, 846.

some steroid, cycloaddition of dichloroketen to, 1829.

Addition of dichlorocarbene to some acyclic trienes, 2000.

Addition of free radicals to unsaturated systems. Part XVIII, the direction of radical addition to 1,3,3,3-tetrafluoropropene, 1750.

Organophosphorus chemistry. Part IX, reaction of dimethyl- and bis(trifluoromethyl)-phosphines with olefins, 197. Part X, reaction of dimethyl- and bis(trifluoromethyl)-phosphines with trifluoroethylene, 744. Part XI, reactions of dimethyl- and bis(trifluoromethyl)-phosphine with olefins, and photochemical reaction of ethyl(bistrifluoromethyl)phosphine with ethylene, 1370.

Reactions of palladium(II) with organic compounds. Part I, oxidative cyclisation of 3-methyl-3-phenylbut-1-ene and 3,3,3-triphenylpropene, 1879.

The oxidative rearrangement of olefins by thallium(III) acetate. Part I, oxidative rearrangement of chalcones, 119. Part II, synthesis of isoflavones, 125.

Thermally induced reactions of 10-diazoanthrone with alkenes, 1851.

Oligosaccharides, chitin, the preparation of, 1654.

Organoboron compounds. Part VII, photochemical reactions of boron halides with aromatic hydrocarbons and aromatic ethers, 485. Part VIII, aliphatic and aromatic diboronic acids, 488. Part IX, diborinic acids and their derivatives, 2225. Part X, the reaction of lithium with trialkyl borates, 2228.

Organometallic compounds. Complexes of terpenes with transition metals. Part I, the reactions of *cis*- and *trans*-ocimene and of myrcene with palladium(II), 2196. Part II, reactions of linalyl and nerolidyl acetates, limonene, and the pinenes with disodium tetrachloropalladate(II), 2200. Part III, dimerisation by means of tetrakis(triphenylphosphine)-palladium, 2203.

Condensed thiophen ring systems. Part IV, synthesis, reactions, and stability of 2-phenyl-3-benzo[*b*]thienyllithium and related compounds, 2592.

Cycloheptatriene and tropylium metal complexes. Part VI, tropone and alkoxycycloheptatriene complexes of tricarbonylchromium, 2315. Part VII, the preparation and ready ring contraction of tricarbonylcarbethoxytropyliumchromium, 2636. Part VIII, a study of directive effects in nucleophilic addition to substituted tricarbonyltropyliumchromiums, 2638.

Hydrocyanation. Part X, cleavage of epoxides with hydrogen cyanide and triethylaluminium and with diethylaluminium cyanide, 2365.

Metalation and halogen-metal exchange in 3-arylthiophens, 1464.

Organometallic derivatives. Part I, heteroannularly substituted trimethylsilylferrocenes, 1789.

oxides, alkoxides, and peroxides. Part III, phenylmercury(II) alkoxides, 2051.

reactions. Part XVII, some exchange and addition reactions of aminodimethyltin compounds, 759. Part XVIII, the reactions of *N*-sulphinyltoluene-*p*-sulphonamide and of *N*-(2,2,2-trichloroethylidene)-toluene-*p*-sulphonamide with some tributyltin-oxygen and -nitrogen compounds, 1570.

Organotin chemistry. Part V, structure of the dialkyltin methoxide halides in solution: an analogy with the Grignard reagent, 821. Part VII, functionally substituted distannoxanes and oligostannoxanes, 2030. Part VIII, functionally substituted distannathianes and tristannathianes, 2035.

Polyhalogenoaromatic compounds. Part XIII, the reduction of pentachloropyridine and derivatives with lithium aluminium hydride and other complex metal hydrides, 1375.

Stable carbonium ions. Part I, 2-ferrocenylnorbornan-2-yl cation, 2552. Part II, the properties of 1-ferrocenyl-3-arylallyl cations, 2556.

Organosilicon chemistry. Part VI, the photochemical reaction of bis(trimethylsilyl)mercury with hexafluorobenzene and with trimethyl(pentafluorophenyl)silane, 2193.

Oridonin. Terpenoids. Part XV, structure and absolute configuration of oridonin isolated from *Isodon japonicus* and *Isodon trichocarpus*, 1674. Part XVI, chemical conversion of oridonin into isodocarpin, 1681.

Osazones, saccharide, structure of, 2567.

Overcrowded molecules. Part IV, thermal and photochemical electrocyclic reactions of *trans*-2-benzylidene-1-diphenylmethylene indane and its 3-methyl derivative, 399. Part V, stereochemistry and stereospecific photochemical rearrangement reaction of 1,2-bisdiphenylmethylene-3-methylindane, 873. Part VI, photocyclisation of *cis*-9a,10-dihydro-9-methyl-10,15-diphenyl-9*H*-benzo[5,6]indeno[2,1-*c*]phenanthrene, 1997.

Overhauser effect, nuclear, an application of; the absolute configuration of geneserine. Alkaloids of *Physostigma venenosum*. Part IX, 2077.

Oxadiazoles. Heterocyclic analogues of cyclopentadienylidenecycloheptatriene derived from 1,3,4-oxadiazole and 1,2,4-triazole, 807.

Synthesis of 1,3,4-oxadiazolium and 1,3,4-oxadiazolo-[3,2-*a*]pyridinium salts, 1397.

Oxadiazolopyridinium salts. Synthesis of 1,3,4-oxadiazolium and 1,3,4-oxadiazolo[3,2-*a*]pyridinium salts, 1397.

1,3-Oxazines, 5-ethyl-5-nitrotetrahydro-, diastereoisomeric derivatives of. Chemistry of nitroparaffins. Part LXXXVIII, 1004.

Oxazoles. Pharmacologically active 4-oxo-4*H*-chromen-2-carboxylic acids. Part II, the synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused imidazole or oxazole ring, 2518.

The synthesis of methyl β-D-lyxofuranoside derivatives bearing a fused oxazoline ring, 1402.

Oxazolidines, formation by the reaction of 2-arenoylaziridines with aldehydes, 2382.

Oxazolines. 2-Oxazolin-4-ones and their conversion into 3-hydroxymethyl-1,2,4-triazoles, 1515.

Oxazoles. Anhydro-2-hydroxyoxazolo[3,2-*a*]pyridinium hydroxide, a mesoionic oxazolone, 1485.

Oxazolopyridines. Anhydro-2-hydroxyoxazolo[3,2-*a*]pyridinium hydroxide, a mesoionic oxazolone, 1485.

Synthesis of oxazolo[3,2-*a*]pyridinium salts, 1938.

Oxidation and photochemical phenylation of halogen-substituted diphenylmethanes in benzene, 2586.

anodic. Part VIII, electrolysis of dimethyl sodiomalonate in hexamethyl phosphoric triamide, 1153. Part IX, electrolysis of ethyl sodiomethylacetoacetate, 1317. Part X, experiments with dimedone(5,5-dimethylcyclohexane-1,3-dione), 2175.

chromium trioxide, of some oestra-1,3,5(10),9(11)-tetraenes. Aromatic steroids. Part IV, 1706.

of 5-alkyl- and 2,5-dialkyl-3-hydroxybenzoquinones in the presence of alkali. The chemistry of hydoxy-quinones. Part V, 1912.

of a 1-pyrroline 1-oxide and the corresponding 1-hydroxy-2-pyrrolidone, 641.

of ethyl α-methylacetoacetate with lead dioxide, 1320.

of hydrazones by lead tetra-acetate, 1033.

of 2,4,6-tri-t-butylphenol. Reactions of lead tetra-acetate. Part XX, 728.

product of galanthamine and narwedine, 592.

Oxidations involving silver. Part VI, oxidation of α-amino-acids and α-amino-esters with silver(II) picolinate and silver(II) oxide, 815.

Polyhalogeno-aromatic compounds. Part XIV, nucleophilic substitution and peroxy-acid oxidation of pentabromopyridine and some of its *NN*-dialkylamino- and bis-(*NN*-dialkylamino)-derivatives, 1523.

Terpenoids. Part LXVI, simultaneous functionalization of the angular 10- and 13-methyl groups in 11β-hydroxylanostan-3β-yl acetate by oxidation with lead tetra-acetate–iodine, 1089.

Oxidative cleavage of 2′-methylandrostano[17,16-*c*]furans. Pyrolysis of 17-oxygenated 16-methylene-20-oxosteroids. Part II, 1349.

Oxidative coupling, phenolic, of a dihydroxy-1-phenethyl-1,2,3,4-tetrahydroisoquinoline. Studies on the syntheses of heterocyclic compounds. Part CCCXIII, 922.

Oxidative cyclisation of ketone thiosemicarbazones. Part I, 4-methyl- and 4-aryl-thiosemicarbazones, 63. Part II, derivatives of phenoxyacetone, 323.

of 3-methyl-3-phenylbut-1-ene and 3,3,3-triphenyl-propene. Reactions of palladium(II) with organic compounds. Part I, 1879.

Oxidative rearrangement of olefins by thallium(III) acetate. Part I, oxidative rearrangement of chalcones, 119. Part II, synthesis of isoflavones, 125.

Oxidative ring closure of compounds of the buta-1,3-diene-1-thiol type with halogens to give thiophen derivatives, mechanism of, 914.

***N*-Oxide,** pentafluoro- and pentachloro-benzonitrile, synthesis and cycloaddition reactions of. Polyhalogenoaromatic compounds. Part XII, 1165.

Oxides, alkoxides, and peroxides, organometallic. Part III, phenylmercury(II) alkoxides, 2051.

Oximes. Reactions of diaryl oximes with dimethyl sulphoxide-dicyclohexylcarbodi-imide-acid. Some reactions of *N*-(methylthiomethyl)nitrones, 1718.

Oxygen heterocycles. Part XVI, oxo-derivatives of a new heterocyclic system: 2*H*-naphth[1,8-*bc*]oxepin, 1327.

P

Palladium. Complexes of terpenes with transition metals. Part I, the reactions of *cis*- and *trans*-ocimene and of myrcene with palladium(II), 2196. Part II, reactions of linalyl and nerolidyl acetates, limonene, and the pinenes with disodium tetrachloropalladate(II), 2200. Part III, dimerisation by means of tetrakis(triphenylphosphine)palladium, 2203.

Reactions of co-ordinated ligands. Part V, the mechanisms of the hydrolyses, ester-exchange reactions, deuteriations, and racemisation of the copper(II), zinc(II), magnesium(II) and palladium(II) complexes of *N*-(alkoxycarbonylalkyl)salicylideneimines, 1183.

of palladium(II) with organic compounds. Part I, oxidative cyclisation of 3-methyl-3-phenylbut-1-ene and 3,3,3-triphenylpropene, 1879.

Rearrangements in the formation of some π-allylpalladium compounds, 1788.

Pallidine. The alkaloids of *Corydalis pallida* var. tenuis (Yatabe) and the structures of pallidine and kikemanine, 1060.

Paracentrone, conversion of fucoxanthin into. Carotenoids and related compounds. Part XXVII, 241.

Paraformaldehyde, and nitrous acid, reactions of 9(11)-dehydrohecogenin acetate with. Transformation of the steroidal sapogenin side chain. Part I, 1977.

Paraquat (*NN*′-dimethyl-4,4′-bipyridylium) salts and phenols, stable crystalline complexes from. Charge transfer spectra and reaction intermediates. Part II, 1422.

Parietin, chlorination of, the minor anthraquinones of *Xanthoria parietina* (L.) Beltram, and the synthesis of fragilin and 7-chloro-emodin (' AO-1 '), 307.

Pemptoporphyrin, isopemptoporphyrin, and protoporphyrin IX dimethyl esters, syntheses of, 1928.

Penicillins, studies related to. Part IV, the rearrangement of penicillanic acid derivatives to 1,4-thiazepines, 2089.

1,2,4,6,8-Penta-azanaphthalenes. Aza-analogues of pteridine. Part I, 1,2,4,6,8-penta-azanaphthalene and some methyl-, dihydro-, and 5-alkoxy-derivatives, 139. Part II, the novel use of silver oxide in transetherification of alkoxy-1,2,4,6,8-penta-azanaphthalenes, alkoxynitropyrimidines and related systems, 2661.

Peptides related to bradykinin, synthesis of, 1042.

On cysteine and cysteine peptides. Part V, *S*-trityl- and *S*-diphenylmethyl-cysteine and -cysteine peptides, 2683. Part VI, *S*-acylcysteines in peptide synthesis, 2687.

Perlolyrine, a new base, isolation of; the crystal structure of its hydrobromide dihydrate, and the synthesis of the base. The alkaloids of perennial rye-grass (*Lolium perenne* L.). Part IV, 1091.

Peroxides, organic, containing functional groups. Part IV; preparation and properties of t-butyl peroxy-esters of cyclohexyl- and phenylphosphonic acids, 501.
oxides, and alkoxides, organometallic. Part III, phenylmercury(II) alkoxides, 2051.
Pethidine, enamines related to, 1074.
Pharmacologically active 4-oxo-4*H*-chromen-2-carboxylic acids (2-carboxychromones). Part I, the synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused thiazole ring, 1553. Part II, the synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused imidazole or oxazole ring, 2518.
Phenanthrene. Studies in photochemistry. Part IX, stilbene analogues which fail to undergo photocyclisation to phenanthrene analogues, 172.
Phenanthrene-9,10-quinones, 2,4-dihydroxy- and 1,3-dihydroxy-8-methyl-, syntheses of, and their bearing on the structure of denticulatol, 329.
Phenols, biosynthesis of. Part XXI, the molecular structure of arugosin, a metabolite of a wild-type strain of *Aspergillus rugulosus*, 1175.
reactions of 1,3-dichloroacetone with, 462.
Charge transfer spectra and reaction intermediates. Part II, stable crystalline complexes from phenols and *NN'*-dimethyl-4,4'-bipyridylium (paraquat) salts, 1422.
Phenol dyestuff of Liebermann as an acridan derivative, 2462.
Phenolic oxidative coupling of a dihydroxy-1-phenethyl-1,2,3,4-tetrahydroisoquinoline. Studies on the syntheses of heterocyclic compounds. Part CCCXIII, 922.
Phenol oxidation and biosynthesis. Part XX, the mechanism of erysodienone formation *in vitro*, 1208. Part XXI, the biosynthesis of the *Erythrina* alkaloids, 1213.
Reactions of lead tetra-acetate. Part XX, oxidation of 2,4,6-tri-t-butylphenol, 728.
Use of trimethylsilyl derivatives in simple syntheses of deuteriated anilines, phenols and benzenethiols, 1577.
Phenothiazines, a new synthesis of, involving a new molecular rearrangement. Reduction of nitro- and nitroso-compounds by tervalent phosphorus reagents. Part VII, 2437.
Phenoxyacetone, derivatives of. Oxidative cyclisation of ketone thiosemicarbazones. Part II, 323.
Phenylalanine, (±)-3,4-dihydroxy[β-$^2H_2$]-, synthesis of, and the deuteriation and tritiation of aryl aldehydes in the formyl group, 2049.
Phosgene, acylation of enamines with, and the synthesis of heterocycles, 881.
Phosphorus compounds, reactions of. Part XXII, a reinvestigation of the reactions of activated alkynes with triphenylphosphine hydrobromide. An investigation of the reactions with bases of the vinylphosphonium salts prepared, 1901.
A convenient general procedure for the conversion of alcohols into their monophosphate esters, 2092.
Alkylation of phosphoramidate and phosphinic amide anions, 1009.
Anodic oxidations. Part VIII, electrolysis of dimethyl sodiomalonate in hexamethylphosphoric triamide, 1153.
t-Butyl phosphorus compounds: a correction, 2342.
Complexes of terpenes with transition metals. Part III, dimerisation by means of tetrakis(triphenylphosphine)palladium, 2203.
Cyclic organophosphorus compounds. Part XI, stereoisomeric aralkyl phosphonates of the 1,3,2-dioxaphosphorinan series, 752.
Fluorodiphenylphosphine, 878.
Further ring openings and ring expansions of phosphetans, 1855.
Nitrene. Part VI, reaction of 6'-nitropapaverine and its analogue with triethyl phosphite, 380.
Organic peroxides containing functional groups. Part IV, preparation and properties of t-butyl peroxy-esters of cyclohexyl- and phenylphosphonic acids, 501.
Organophosphorus chemistry. Part IX, reaction of dimethyl- and bis(trifluoromethyl)-phosphines with olefins, 197. Part X, reaction of dimethyl- and bis-(trifluoromethyl)-phosphines with trifluoroethylene, 744. Part XI, reactions of dimethyl- and bis(trifluoromethyl)-phosphine with olefins, and photochemical reaction of ethyl(bistrifluoromethyl)phosphine with ethylene, 1370.
compounds. Part CXXXVI, thiopyrophosphate synthesis by condensation of oxophosphoranesulphenyl chlorides with trialkylphosphites and their structural analogues, 703.
Pentaco-ordinate phosphoranes. Olefinic and heteroaromatic dibipenylylenephosphoranes, 1425.
Purines, pyrimidines, and imidazoles. Part XXXIII, synthesis of 5-methylsulphonyluridine and its 5'-mono- and pyro-phosphates, 2016.
Reactions of phosphines with acetylenes. Part IX, 1,2-alkylidenediphosphoranes stabilised by acyl and ester groups, 5. Part X, structure revision of a so-called spirobiphosphole. The rearrangement of a tricycloallylidene phosphorane to a phosph(III)onin, 386. Part XI, formation of derivatives of 5*H*-diphosph(v)ole and 1,4-diphosph(v)orin, 504.
Reduction of nitro- and nitroso-compounds by tervalent phosphorus reagents. Part VII, a new synthesis of phenothiazines involving a new molecular rearrangement, 2437. Part VIII, syntheses of benzimidazoles and anthranils, 2441.
Some reactions of chloro(di-t-butyl)phosphine and of phenyl di-t-butylphosphinite, 1263.
Some steroid pyrophosphates, 1889.
Synthetic uses of polyphosphoric acid and its ethyl ester. Part II, syntheses of indolin-2(3*H*)-ones and imidazoquinolines, 829.
Tertiary butyl phosphorus compounds, 332.
Tertiary-pentyl phosphorus compounds, 2529.
The reaction of tetramethyldiphosphine with butadiene, 1990.
Thermal decomposition of phosphorothioates, 523.
The synthesis and rearrangement of alk-2-ynylphosphines, 1835.
Wittig reactions of 1,2-dihydro-1,2-bis(triphenylphosphoranylidene)benzocyclobutene and benzocyclobutene-1,2-quinone. The synthesis of dibenzo[*a,c*]-benzo[3,4]cyclobuta[1,2-*f*]cyclo-octene, 2137.
Photochemistry and preparation of some tetrazaporphins, 175.
of some 4-hydroxycyclohexa-2,5-dienones, 1607.
of some non-conjugated unsaturated 1,2-diketones, 1197.
studies in. Part VIII, the ultraviolet, proton magnetic resonance and mass spectra, and photocyclisation of some styrylnaphthalenes to some benzo[*c*]phen-

Photochemistry (*contd.*)
anthrenes and chrysenes, 163. Part IX, stilbene analogues which fail to undergo photocyclisation to phenanthrene analogues, 172.
Aryne chemistry. Part XXVII, the photolysis of 1,2-diiodotetrafluorobenzene in the presence of benzene, 2569.
2-hydroxycyclopentenone derivatives from photocyclisation of αβ-unsaturated 1,2-diketones: a suggested triplet biradical intermediate, 1193.
Light-induced and related reactions of quinones. Part V, substituent effects in light-induced reactions between *p*-quinones and aldehydes, 645. Part VI, reactions of some *p*-quinones carrying formyl groups, 649.
reactions of formamide with acetylenes, 893.
peri-Naphthotriazines and related compounds. Part III, some photochemical reactions: synthesis of 1-methylacenaphtho[5,6-*bc*]pyridine, 298.
Organoboron compounds. Part VII, photochemical reactions of boron halides with aromatic hydrocarbons and aromatic ethers, 485
Organophosphorus chemistry. Part XI, reactions of dimethyl- and bis(trifluoromethyl)-phosphine with olefins, and photochemical reaction of ethyl(bistrifluoromethyl)phosphine with ethylene, 1370.
Organosilicon chemistry. Part VI, the photochemical reaction of bis(trimethylsilyl)mercury with hexafluorobenzene and with trimethyl(pentafluorophenyl)silane, 2193.
Overcrowded molecules. Part IV, thermal and photochemical electrocyclic reactions of *trans*-2-benzylidene-1-diphenylmethyleneindane and its 3-methyl derivative, 399. Part V, stereochemistry and stereospecific photochemical rearrangement reaction of 1,2-bisdiphenylmethylene-3-methylindane, 873. Part VI, photocyclisation of *cis*-9a,10-dihydro-9-methyl-10,15-diphenyl-9*H*-benzo[5,6]indeno[2,1-*c*]-phenanthrene, 1997.
Photochemical cyclisation of some iodophenyl- and iosothienyl(thienyl)ethylenes, 2504.
phenylation and oxidation of halogen-substituted diphenylmethanes in benzene, 2586.
Photolysis of α-aryloxy-ketones, 155.
of t-butyl-substituted *p*-benzoquinone mono- and di-imine derivatives, 2604.
Photo-oxygenation studies of some derivatives of *ent*-gibberellane, 1341.
Photoreaction of nitroso-compounds in solution. Part XIV, reations of amido-radicals, 1138.
Studies in azide chemistry. Part II, photolysis of 2*H*-hexafluoropropyl and 2-chloro-1,1,2-trifluoroethyl azide, 1017.
on heterocyclic chemistry. Part VII, thermally induced dimerization of 5-aminoisoxazoles and 2*H*-azirines and photochemistry of 5-aminoisoxazoles, 1825.
The chemistry of terpenes. Part XI, volatile products of the photolysis of (+)-*cis*-caran-5-one, 1447.
Phthalocyanines, halogeno-, synthesis of. Polyfluoroarenes. Part XIV, 2667.
Phthalonitrile, tetrafluoro-, reactions with nucleophilic reagents. Polyfluoroarenes. Part XI, 456.
Physalis alkekengi var. *Francheti*, structures of physalin A and physalin B, 13,14-seco-16,24-cyclo-steroids from, 664.
Physostigma venenosum, alkaloids of. Part IX, the absolute configuration of geneserine; an application of the nuclear Overhauser effect, 2077.
Phytotoxic compounds produced by *Fusarium equiseti*. Part IV, fission of trichothecan-3α,4β-diols by manganese dioxide, 369. Part V, transformation products of 4β,15-diacetoxy-3α,7α-dihydroxy-12,13-epoxytrichothec-9-en-8-one and the structures of nivalenol and fusarenone, 375. Part VI, 4β,8α,15-triacetoxy-12,13-epoxytrichothec-9-ene-3α,7α-diol, 378.
3-Picoline, reaction with some substituted phenyl-lithium derivatives. Aromatic substitution. Part XXV, 128.
Pigments of *Elsinoe* species. Part III, methylation of elsinochrome. A Formation of mono- and di-methyl ethers, 2152. Part IV, confirmatory evidence for the structure of elsinochrome A and its ethers from studies of nuclear magnetic resonance (solvent and Overhauser effects) and electron spin resonance, 2154. Part V, the structure of elsinochrome D, 2159.
of *Pseudomonas* species. Part III, the synthesis of demethylaeruginosin B and aeruginosin B, 2447.
Caulperin, a new red pigment from green algae of the genus *Caulerpa*, 842.
Pinacol rearrangements. Stereochemistry and mechanism of pinacol-type rearrangements in the 1-phenyl-4-t-butylcyclohexane series, 1168.
Pinenes, limonene, and linalyl and nerolidyl acetates, reactions of, with disodium tetrachloropalladate(II). Complexes of terpenes with transition metals. Part II, 2200.
Some free-radical addition reactions of pin-2-ene, pin-2(10)-ene and thuj-4(10)-ene, 258.
Piperazine-2,5-diones, 3-arylidene-6-methyl-, geometrical isomerism and tautomerism of, 980.
3-benzylidene-, on the synthesis of, 2530.
Piperidin-4-ols, 1-alkyl- and aralkyl-3-methyl-4-*o*-tolyl-, synthesis, configuration and dehydration of some, 135.
Plant gums of the genus *Khaya*. Part IV, major component of *Khaya ivorensis* gum, 361. Part V, further studies on *Khaya senegalensis* gum, 365.
(±)-Platydesminium salt and other alkaloids from *Skimmia japonica* Thunb. The synthesis of edulinine. Quinoline alkaloids. Part X, 556.
Polycycles. Free-radical reactions of halogenated bridged polycyclic compounds. Part X, addition of bromine and chlorine to hexachloronorbornadiene, 659.
Rigid polycyclic systems. The reaction between cyclopentadiene and acenaphthylene and spectral properties of the adducts and derived alcohols and ketones, 596.
Some polycyclic systems related to [1]benzothieno[2,3-*c*]-pyridine, 2269.
Polyetherin A (nigericin), studies on the antibiotic, 695.
Polypeptides, linear, of a known repeating sequence of amino-acids. Synthesis of poly(L-tyrosyl-L-glutamyl-L-valylglycyl)[1-^{14}C]glycine ethyl ester, 2247.
Polysaccharides, water-soluble, of *Cladophora rupestris*. Part IV, autohydrolysis, methylation of the partly desulphated material, and correlation with the results from Smith degradation, 1561.
Plant gums of the genus *Sterculia*. Part IV, acidic oligosaccharides from *Sterculia urens* gum, 2256.
Porphyrins. Formylation of iron(III) porphyrins and chlorins of natural origin, 903.
Syntheses of pemptoporphyrin, isopemptoporphyrin and protoporphyrin IX dimethyl esters, 1928.

Portentol: an unusual polypropionate from the lichen *Roccella portentosa*, 1612.

Potassium cyanide, reactions of some benzylidene compounds with, 1916.

Potassium thiobenzoate, rates of the nucleophilic substitution reactions of some 1,2:5,6-di-*O*-isopropylidene-3-*O*-tosyl-α-D-hexoses with. Thio-sugars. Part V, 712.

Pregnanes. D-Homo-steroids. Part II, a study of the mechanism of base-catalysed D-homoannulation of 3β-17α-dihydroxy-5α-pregnan-20-one, 2045.

Microbiological hydroxylation of steroids. Part I, proton magnetic resonance spectra of ketones, alcohols and acetates in the androstane, pregnane and oestrane series, 250.

Side-chain conformations of 5α,17α-pregnan-20α- and 20β-ols: a nuclear magnetic resonance study, 853.

Steroid conjugates. Part II, synthesis of 5β-pregnane-3α,20α-diol 20-monosulphate, 2266.

Steroids. Part XXXIV, 17β-hydroxy-5β,14α,17α-pregnan-20-one and related compounds, 558.

Urinary steroids. Part VIII, an exploration of routes to pregnane-20α-21-diol derivatives, 1498.

Steroidal analogues of unnatural configuration. Part I, 4,4,14α-trimethyl-19(10 → 9β)*abeo*-10α-pregn-5-enes from cucurbitacins, 1592.

Prehelminthosporol, 9-hydroxy-, a metabolite of *Cochliobolus* (*Helminthosporium*) *sativus*, 686.

Propene. Free-radical additions to unsaturated systems. Part XVII, reaction of trifluoroiodomethane with mixtures of ethylene and vinyl fluoride and of ethylene and propene, 414.

Studies in azide chemistry. Part III, polyfluorinated azides from 1*H*- and 2*H*-pentafluoropropene and perfluorobut-2-yne, 2172.

Propiolic acids, phenyl- and methyl-, the stereochemistry of the reaction of Grignard and lithium reagents with, 1380.

(±)-Protolichesterinic acid in *Cetraria islandica*, biosynthesis of, 1848.

Protopine alkaloids. Synthesis of 5,6,7,8-tetrahydro-7-methyldibenz[*c*,*g*]azecin-14[13*H*]-one: the structural skeleton of the protopine alkaloids, 2578.

Protoporphyrin, pemptoporphyrin, and isopemptoporphyrin IX dimethyl esters, syntheses of, 1928.

Pschorr reaction of 8-amino-1,2,3,4-tetrahydro-1-phenethylisoquinoline, abnormal products of the, 2209.

Pseudomonas species, pigments of. Part III, the synthesis of demethylaeruginosin B and aeruginosin B, 2447.

Pteridine, aza-analogues of. Part I, 1,2,4,6,8-penta-azanaphthalene and some methyl, dihydro-, and 5-alkoxy-derivatives, 139. Part II, the novel use of silver oxide in transetherification of alkoxy-1,2,4,6,8-penta-azanaphthalenes, alkoxynitropyrimidines and related systems, 2661.

Pteridine studies. Part XXXIX, pteridines unsubstituted in the 4-position; a new synthesis from pyrazines, *via* 3,4-dihydropteridines, 1540.

Reduction of quaternary pteridines and purines by sodium borohydride, 91.

Pulegone oxides. Circular dichroism studies, 1745.

Punica granatum and *Withania somnifera*, biosynthesis of some alkaloids of, 1792.

Purine analogues, potentially chemotherapeutic. Part V, some hydrazone derivatives of pyrazole-4,5-diones and their cyclisation to pyrazolo-[3,4-*e*][1,2,4]triazines, 1313.

Purines, pyrimidines, and imidazoles. Part XXXIII, synthesis of 5-methylsulphonyluridine and its 5′-mono- and pyro-phosphates, 2016. Part XXXIV, synthesis and some reactions of *N*(6)-(formylmethyl)adenine, 2206.

Reduction of quaternary pteridines and purines by sodium borohydride, 91.

Pyranoxanthenones containing a dimethylchromen system, the synthesis of, 1662.

Pyrazines. Preparation and reactions of some substituted pyrazine di-*N*-oxides, 1070.

Pteridine studies. Part XXXIX, pteridines unsubstituted in the 4-position; a new synthesis from pyrazines, *via* 3,4-dihydropteridines, 1540.

Pyrazoles and pyrimidines, some cyclohexane- and androstane-substituted, 1885.

A study of pyrazolin-5-one tautomerism. Part IV, natural abundance carbon-13 nuclear magnetic resonance spectra, 1842.

Potentially chemotherapeutic purine analogues. Part V, some hydrazone derivatives of pyrazole-4,5-diones and their cyclisation to pyrazolo[3,4-*e*][1,2,4]triazines, 1313.

Preparation and reactions of cyclic α-monocarbonyl azo-compounds: 1-pyrazolin-3-one derivatives, 540.

Pyrone series. Part XI, reactivity of 4,6-diaryl-2-pyrones and cyclopropane derivatives obtained from 2-pyrazolines, 1578.

Some pyrazolesulphenyl chlorides and derivatives, 78.

Pyrazolotriazines. Potentially chemotherapeutic purine analogues. Part V, some hydrazone derivatives of pyrazole-4,5-diones and their cyclisation to pyrazolo-[3,4-*e*][1,2,4]triazines, 1313.

Pyrenophorin and radicinin, biosynthesis of. Metabolic products of *Stemphylium radicinum*. Part III, 1860.

Pyridazine, 4,5-diphenyl-: preparation and ultraviolet spectrum, 1316.

10*H*-Pyridazino[4,3-*b*][1,4]benzothiazine, 3-hexyloxy-, methylation of, 2672.

Pyridines, 2- and 4-substituted 3-amino- and 3-nitro-, cyclisations of. Synthesis of polynuclear heterocycles. Part II, 1874.

Equilibrium between 4-acetoxy-pyridine and *N*-acetyl-4-pyridone: a correction of the literature, 2426.

Heterocyclic analogues of cyclopentadienylidenecycloheptatriene derived from pyridine, 800.

polyfluoro-compounds. Part XVIII, reaction of pentafluoropyridine with chlorine and with bistrifluoromethyl nitroxide, 55.

Homolytic substitution of heteroaromatic compounds. Part II, homolytic methylation of pyridine, quinoline and isoquinoline in acidic and non-acidic media, 2169.

Metal ions and complexes in organic reactions. Part XIII, oxidative effects of silver(II) complexes of pyridinecarboxylic acids, 1975.

Polyhalogenoaromatic compounds. Part XI, some reactions of 2,3,5,6-tetrachloro-4-mercapto- and 2,3,5,6-tetrachloro-4-methylthiopyridine, 193. Part XIII, the reduction of pentachloropyridine and derivatives with lithium aluminium hydride and other complex metal hydrides, 1375. Part XIV, nucleophilic substitution and peroxy-acid oxidation of pentabromopyridine and some of its *NN*-dialkylamino- and bis-(*NN*-dialkylamino)-derivatives, 1523. Part XV, preparation and reactions of tetrachloropyridine-4-sulphenyl chloride and tetrachloropyridine-4-sulphonyl chloride, 1530.

Pyridines (*contd.*)
The alkaloids of *Gelsemium sempervirens*. Part IV, derivatives of pyridine, isoquinoline, and indol-2(3*H*)-one as possible initial materials for synthesis of gelsemine, 796.
The synthesis of oxazolo[3,2-*a*]pyridinium salts, 1938.
Pyridyl amines. The synthesis and spectra of some mono-substituted tri-(2-pyridyl)amines, 2435.
3- and **4-Pyridylhydrazones,** thermal indolisation of. Diazaindenes (azaindoles). Part II, 303.
Pyrimidines. Part III, synthesis of some 5-alkylthiopyrimidines, 986.
Part XXIII, synthesis of pyrimido[4,5-*b*][1,4]oxazines by reaction of 4,5-diamonipyrimidine derivatives with α-halogeno-ketones, 437.
alkoxynitro-, alkoxy-1,2,4,6,8-penta-azanaphthalenes, and related systems, the novel use of silver oxide in transetherification of. Aza-analogues of pteridine. Part II, 2661.
and pyrazoles, some cyclohexane- and androstane-substituted, 1885.
imidazoles, and purines. Part XXXIII, synthesis of 5-methylsulphonyluridine and its 5′-mono- and pyrophosphates, 2016. Part XXXIV, synthesis and some reactions of *N*(6)-(formylmethyl)adenine, 2206.
Heterocyclic polyfluoro-compounds. Part XIX, synthesis of and nucleophilic substitution in some 2,4,6-trifluoropyrimidines; formation of trifluoromethylpyrimidines by pyrolysis of tetrafluoropyrimidine, 1280.
studies. Part XIII, ready ring cleavage of some pyrimidine derivatives to give highly substituted ethylenes, 494.
Pyrimidine nucleosides. Part IV, reactions of 3-(β-D-ribofuranosyl)uracils, 1365. Part V, reactions of 3-(β-D-ribofuranosyl)uracils and related compounds, 1869.
reactions. Part XX, thermal rearrangement of 5-(*p*-substituted phenyl)-2(and 4)-methoxypyrimidines, 214.
The zinc–acetic acid catalysed ring contraction of pyrimidines to pyrroles, 1658.
Pyrones. Pyrone series. Part XI, reactivity of 4,6-diaryl-2-pyrones and cyclopropane derivatives obtained from 2-pyrazolines, 1578.
Pyrroles and thiophens, 3-cyano-4-hydroxy-, carbamic esters of. The synthesis of potential insecticides. Part III, 2409.
the zinc–acetic acid catalysed ring contraction of pyrimidines to, 1658.
Ester exchange in ethyl *N*-substituted-4-hydroxy-5-oxo-3-pyrroline-3-carboxylates, 715.
Oxidation of a 1-pyrroline 1-oxide and the corresponding 1-hydroxy-2-pyrrolidone, 641.
Pyrrole studies. Part XV, Vilsmeier–Haack formylation of 1-substituted pyrroles, 2563.
Some reactions of enamines. Part II, some alkylation reactions of the pyrrolidine enamines of 3,4-dihydronaphthalen-1(2*H*)-one and 6,7,8,9-tetrahydro-5*H*-benzocyclohepten-5-one, 35.
Studies related to the chemistry of melanins. Part VI, syntheses of 3-carboxypyrrole-2-acetic acid, 3,5-dicarboxypyrrole-2-acetic acid, and related compounds, 285. Part VIII, the pyrrolecarboxylic acids formed by oxidation or hydrolysis of melanins derived from 3,4-dihydroxyphenethylamine or (±)-3,4-dihydroxyphenylalanine, 1128.
Pyrrolizidine alkaloids. The absolute configuration at C-2 in monocrotalic acid, 1334.
Pyrylium salts. The dithiole series. Part IV, syntheses of dithiolylidene ketones and 1,6,6aS(IV)-trithiapentalenes from dithiolylium salts and of analogous compounds from pyrylium and thiopyrylium salts, 1202.

Q

Quaternary ammonium hydroxides, the thermal decomposition of. Part IV, rearrangement of the methohydroxides of *N*-(α-substituted benzyl)-*N*-methylanilines, 2276.
Quinazolines. Part XIV, the absolute configurations of *cis*- and *trans*-(+)- and (−)-decahydroquinazolines and 2-amino-octahydroquinazolines, 1597.
Quinazoline analogues of folic acid, 997.
Reactions of 2-amino-1,4-dihydro-1-methylquinazoline with electrophilic reagents, 2134.
Quinolines, preparation of, from α-methylene-ketones, 2488.
Homolytic substitution of heteroaromatic compounds. Part II, homolytic methylation of quinoline, isoquinoline and pyridine in acidic and non-acidic media, 2169.
Quinoline alkaloids. Part X, (+)-platydesminium salt and other alkaloids from *Skimmia japonica* Thunb. The synthesis of edulinine, 556.
Quinolizines. Part XIII, rearrangement of quinoliziniun-1-diazonium salts into *v*-triazolo[1,5-*a*]pyridines, 688.
Quinones, hydroxy-, the chemistry of. Part V, the oxidation of 5-alkyl- and 2,5-dialkyl-3-hydroxybenzoquinones in the presence of alkali, 1912. Part VI, formation of 2-hydroxy-semiquinones during the autoxidation of benzene-1,2,4-triols in alkaline solution, 2101.
light-induced and related reactions of. Part V, substituent effects in light-induced reactions between *p*-quinones and aldehydes, 645. Part VI, reactions of some *p*-quinones carrying formyl groups, 649.
naturally occurring. Part XVII, synthesis of lambertellin, 109.
Formation of xanthen and fluorene derivatives by competitive 1,4- and 1,3-cycloadditions of quinonylmethyl anions to quinones, 722.
Quinone epoxides. Part VI, the synthesis and stereochemistry of terremutin, 1945.
Reactive intermediates. Part XI, the generation and some reactions of benzynequinone, 583.
Syntheses of 2,4-dihydroxy- and 1,3-dihydroxy-8-methylphenanthrene-9,10-quinones and their bearing on the structure of denticulatol, 329.
***o*-Quinonoid** compounds. Part II, 1,4-diphenyl-2-benzopyran-3-one and its iron carbonyl complexes, 530. Part III, benzopyran-3-ones and their salts, 536.
Quinoxaline, homolytic acylation of. Nucleophilic character of acyl radicals, 929.

R

Radicinin and pyrenophorin, biosynthesis of. Metabolic products of *Stemphylium radicinum*. Part III, 1860.
Rearrangements, molecular, and novel analgesics, in the morphine-thebaine group. Part XVII, compounds related to the thebaine–maleic anhydride adduct, 560.

Rearrangements (*contd.*)
of 1,1-dihalogeno-2,2-diarylethanes and the corresponding 1-halogenoethylenes in boiling ethylene glycol, alone or in the presence of sodium 2-hydroxyethoxide. Reactions with asymmetric diarylethanes and diarylethylenes. Part XIII, 409.
Rearrangement of *N*-(2-bromoallyl)-arylamines to 2-methylindoles, 74.
Reduction of benzyl sulphonyl (sulphone) intermediates to sulphinic acids. Synthesis of hypotaurine and of L-cysteine and L-homocysteine sulphinic acids, 270.
of epoxides by borohydride anion, stereochemistry of, 928.
of nitro- and nitroso-compounds by tervalent phosphorus reagents. Part VII, a new synthesis of phenothiazines involving a new molecular rearrangement, 2437. Part VIII, syntheses of benzimidazoles and anthranils, 2441.
of quaternary pteridines and purines by sodium borohydride, 91.
of unhindered cyclohexanones to axial alcohols in the presence of a soluble iridium-phosphite catalyst. Aspects of catalysis. Part I, 785.
selective, of nitroaromatic compounds, 435.
Diborane as a reducing agent. Part III, the reduction of oxygen heterocyclic carbonyl compounds and aromatic esters, and the catalytic action of boron trifluoride, 1667.
Triazines and related products. Part VII, reductive fission of 1,2,3-benzotriazines with hydrazine and Raney nickel, 2308.
Reductive amination of substituted indole-2,3-diones, 550.
RNA components, transfer. Part I. Nucleosides. Part X, direct synthesis of nucleosides of cytosine and 2-thiocytosine, 1109.
Roccella portentosa, the lichen: portental, an unusual polypropionate from, 1612.

S

Salicylideneimines, *N*-(alkoxycarbonylalkyl)-, the mechanisms of the hydrolyses, ester-exchange reactions, deuterations, and racemisation of the copper(II), zinc(II), magnesium(II), and palladium(II) complexes of. Reactions of co-ordinated ligands. Part V, 1183.
Salvia, *Chrysanthemum,* and *Artemisia* species, biosynthesis of (+)- and (−)-camphor in. Terpene biosynthesis. Part III, 2694.
Sanguinarine chloride, synthesis of. 1,2-Dihydroisoquinolines. Part XIII, 1797.
Santonene, chemistry of. Part IV, n.m.r. studies of the autoxidation products of santonene, 2008. Part V, the stereochemistry of γ-metasantonin, 2012.
Sapelins A and B, structures of. Triterpenoids from *Entandrophragma cylindricum* Sprague. Part I, 311.
Sapogenin side chain, steroidal, transformation of. Part I, reactions of 9(11)-dehydrohecogenin acetate with nitrous acid and with paraformaldehyde, 1977.
Schmidt reaction, abnormal: 4,5-dihydro-1*H*-1-benzazepin-2(3*H*)-one from γ-phenylbutyric acid, 2058.
Selenium. Carcinogenic nitrogen compounds. Part LXVIII, a new class of pseudoazulenes: [1]benzoselenino[4,3-*b*]indoles, 1058.
Nuclear magnetic resonance and mass spectra of benzoselenopheno[2,3-*b*]benzoselenophens, 939.
Preparation, reactions, and structure of 5,10-epoxy-, 5,10-epithio-, 5,10-episeleno-, and 5,10-epitelluro-5,10-dihydroarsanthren, 810.
Sempervirine. The alkaloids of *Gelsemium sempervirens.* Part III, 791.
Senecio othonniformis Fourcade, suggested structures for two new alkaloids from, isoline and bisline. The *Senecio* alkaloids, 2312.
Sericenine, structure of, 985.
Sesamolin, the sterochemistry of, 2332.
Silicon. Halogen-metal exchange reactions with 2-halogenoalkylsilicon compounds, 1740.
Organometallic derivatives. Part I, heteroannularly substituted trimethylsilylferrocenes, 1789.
Organosilicon chemistry. Part VI, the photochemical reaction of bis(trimethylsilyl)mercury with hexafluorobenzene and with trimethyl(pentafluorophenyl)silane, 2193.
Tetracycline studies. Part III, trimethylsilyl derivatives of tetracyclines, 636.
Use of trimethylsilyl derivatives in simple syntheses of deuteriated anilines, phenols, and benzenethiols, 1577.
Silver(II) complexes of pyridinecarboxylic acids, oxidative effects of. Metal ions and complexes in organic reactions. Part XIII, 1975.
oxidations involving. Part VI, oxidation of α-amino-acids and α-amino-esters with silver(II) picolinate and silver(II) oxide, 815.
oxide, the novel use of, in transetherification of alkoxy-1,2,4,6,8-penta-azanaphthalenes, alkoxynitropyrimidines and related systems. Aza-analogues of pteridine. Part II, 2661.
Sinomenine, an approach to the synthesis of, 624.
Skimmia japonica Thunb., (+)-platydesminium salt and other alkaloids from. The synthesis of edulinine. Quinoline alkaloids. Part X, 556.
Smith degradation. The water-soluble polysaccharides of *Cladophora rupestris.* Part IV, autohydrolysis, methylation of the partly desulphated material, and correlation with the results from Smith degradation, 1561.
Sodium compounds. Reactions with asymmetric diarylethanes and diarylethylenes. Part XIII, rearrangements of 1,1-dihalogeno-2,2-diarylethanes and the corresponding 1-halogenoethylenes in boiling ethylene glycol, alone or in the presence of sodium 2-hydroxyethoxide, 409.
Sodium compounds. Reduction of quaternary pteridines and purines by sodium borohydride, 91.
Synthesis of *N*-halogeno-*N*-sodioalkanesulphonamides, 2087.
Spectra and synthesis of some mono-substituted tri-(2-pyridyl)amines, 2435.
synthesis, and reactions of some *S*-alkylthiophenium salts, 1764.
Rigid polycyclic systems. The reaction between cyclopentadiene and acenaphthylene and spectral properties of the adducts and derived alcohols and ketones, 596.
Studies related to the chemistry of melanins. Part XII, some spectroscopic experiments regarding intermediates in melanogenesis, 1664.
charge transfer, and reaction intermediates. Part II, stable crystalline complexes from phenols and *NN'*-dimethyl-4,4'-bipyridylium (paraquat) salts, 1422.

Spectra (*contd.*)
circular dichroism and optical rotatory dispersion. Part LXVI, 2-halogenoalkanes, 1329. Part LXVII, biotin and related compounds, 1330. Part LXVIII, low temperature circular dichroism of etianic acids (androstane-17-carboxylic acids) and related compounds, 2417. Part LXIX, camphor derivatives; 'anti-octant' behaviour of hydroxy- and acetoxy-substituents, 2678.
and optical rotatory dispersion of some hexahydroindanone derivatives; methyl- and methylene-substituted steroid ketones, 423.
nuclear magnetic resonance, and crystal structure of 4α-bromo-5α-androst-2-ene-1,17-dione, 2111.
studies. The pulegone oxides, 1745.
electron spin resonance. Pigments of *Elsinoe* species. Part IV, confirmatory evidence for the structure of elsinochrome A and its ethers from studies of nuclear magnetic resonance (solvent and Overhauser effects) and electron spin resonance, 2154.
infrared. An infrared spectroscopic method of distinguishing isomeric disubstituted hydrazines as salts, 2707.
mass, and nuclear magnetic resonance, of benzoselenopheno[2,3-*b*]benzoselenophens, 939.
of diaryltriazenes and 1,2,3-benzotriazines, 1238.
High resolution mass spectrometry. Part VII, 1,2,3-thiadiazole derivatives, 2042.
Mass spectral studies. Part VII, unusual fragmentation of some *N*-trifluoroacetyl amino-acid methyl esters, 116.
Mass spectrometry of organic compounds. Part V, mass spectra of substituted aroylhydrazones, 2574.
Studies in photochemistry. Part VIII, the ultraviolet, proton magnetic resonance, and mass spectra, and photocyclisation of some styrylnaphthalenes to some benzo[*c*]phenanthrenes and chrysenes, 163.
nuclear magnetic resonance and mass, of benzoselenopheno[2,3-*b*]benzoselenophens, 939.
a study: side-chain conformations of 5α,17α-pregnan-20α and 20β-ols, 853.
circular dichroism, and crystal structure of 4α-bromo-5α-androst-2-ene-1,17-dione, 2111.
natural abundance carbon-13. A study of pyrazolin-5-one tautomerism. Part IV, 1842.
of some limonoids, chemical shifts of the tertiary methyl groups in. Part II, 2396.
Chemistry of cephalosporin antibiotics. Part XVI, configurational and conformational analysis of deacetoxy-Δ^2- and -Δ^3-cephalosporins and their corresponding sulphoxide isomers by nuclear magnetic resonance, 340.
Chemistry of santonene. Part IV, n.m.r. studies of the autoxidation products of santonene, 2008.
Pigments of *Elsinoe* species. Part IV, confirmatory evidence for the structure of elsinochrome A and its ethers from studies of nuclear magnetic resonance (solvent and Overhauser effects) and electron spin resonance, 2154.
optical rotatory dispersion. Part LXIV, influence of solvents upon the Cotton effects of some ketones, 350. Part LXV, circular dichroism and optical rotatory dispersion of some hexahydroindenone derivatives; methyl- and methylene-substituted steroid ketones, 423.
and circular dichroism. Part LXVI, 2-halogenoalkanes, 1329. Part LXVII, biotin and related compounds, 1330. Part LXVIII, low temperature circular dichroism of etianic acids (androstane-17-carboxylic acids) and related compounds, 2417. Part LXIX, camphor derivatives; 'anti-octant' behaviour of hydroxy- and acetoxy-substituents, 2678.
and circular dichroism of some hexahydroindanone derivatives; methyl- and methylene-substituted steroid ketones, 423.
of geometrical isomers of arylazoalkanes. Arylazosteroids. Part VI, 106.
proton magnetic resonance, of ketones, alcohols, and acetates in the androstane, pregnane, and oestrane series. Microbiological hydroxylation of steroids. Part I, 250.
Studies in photochemistry. Part VIII, the ultraviolet, proton magnetic resonance, and mass spectra, and photocyclisation of some styrylnaphthalenes to some benzo[*c*]phenanthrenes and chrysenes, 163.
ultraviolet, and preparation, of 4,5-diphenylpyridazine, 1316.
Studies in photochemistry. Part VIII, the ultraviolet, proton magnetic resonance, and mass spectra, and photocyclisation of some styrylnaphthalenes to some benzo[*c*]phenanthrenes and chrysenes, 163.
Ultraviolet spectral study of β-amino-enones, 111.
Spirans. Part VII, three isomeric grisan derivatives from the oxidative cyclisation of benzylidenebis-2-naphthol, 1557.
Spirobenzofurans, novel heterocyclic, 931.
Sporidesmins. Part X, synthesis of polysulphides by reaction of dihydrogen disulphide with disulphides and thiols, 432.
Stemphyllium radicinum, metabolic products of. Part III, biosynthesis of radicinin and pyrenophorin, 1860.
Sterculia genus, plant gums of the. Part IV, acidic oligosaccharides from *Sterculia urens* gum, 2256. Part V, degradation of carboxy-reduced *Sterculia urens* gum, 2259.
Stereochemistry and mechanism of pinacol-type rearrangements in the 1-phenyl-4-t-butylcyclohexane series, 1168.
and stereospecific photochemical rearrangement reaction of 1,2-bisdiphenylmethylene-3-methylindane. Overcrowded molecules. Part V, 873.
and synthesis of terremutin. Quinone epoxides. Part VI, 1945.
of 1,2,3,4-tetrahydro-6-methoxy-2-methyl-1-phenylisoquinoline and related compounds, 2213.
of β-chlorovinyl-aldehydes, 2484.
of γ-metasantonin. Chemistry of santonene. Part V, 2012.
of reduction of epoxides by borohydride anion, 928.
of sesamolin, 2332.
of some stages in tetracyclic diterpene biosynthesis. Studies in terpenoid biosynthesis. Part VI, 2601.
of the reaction of Grignard and lithium reagents with phenyl- and methyl-propiolic acids, 1380.
of the Tiffeneau–Demjanov ring expansion of 5α-cholestan-3-one. Synthetic steroids. Part XI, 736.
Aminobicyclo[2,2,1]heptanes. Part II, diastereoisomeric dimethylaminobornyl acetates, 49.

Stereochemistry (*contd.*)
A reference list of organic structures whose absolute configurations have been determined by *X*-ray methods. Part IV, 2340.
Chemistry of cephalosporin antibiotics. Part XVI, configurational and conformational analysis of deacetoxy-Δ^2- and -Δ^3-cephalosporins and their corresponding sulphoxide isomers by nuclear magnetic resonance, 340.
Chemistry of nitroparaffins. Part LXXXVIII, diastereoisomeric derivatives of 5-ethyl-5-nitrotetrahydro-1,3-oxazines, 1004.
Configurational isomers of 3-substituted *cis*-hexahydrocarbazoles, 1.
Conformational effects in 20-oxosteroids, 57.
Cope rearrangement of some germacrane-type furan sesquiterpenes. Part II, relationship between conformations of carbocyclic ten-membered rings in germacrane-type furan sesquiterpenes and the stereochemistry of their Cope rearrangement products, 2697.
Crystal structure and absolute configuration of the diterpenoid, methyl 6α-bromo-12-methoxy-7-oxopodocarpate, 887.
Cyclic organophosphorus compounds. Part XI, stereoisomeric aralkyl phosphonates of the 1,3,2-dioxaphosphorinan series, 752.
Elimination reactions and configurations of 1-methylcyclohexyl derivatives, including steroid analogues, 182.
Geometrical isomerism and tautomerism of 3-arylidene-6-methyl-piperazine-2,5-diones, 980.
Neighbouring-group participation by sulphinyl-oxygen. Part III, stereomutations at the sulphur atom in norbornene disulphoxides, 572.
Preparation and absolute configuration of the enantiomeric 3,4-dihydro-4-methylcoumarins, 2324.
Preparation of *meso*, (±)-, and optically active forms of 3,6-bis-(1-hydroxy-1-phenylpropyl)- and 3,6-bis-(1-hydroxy-1-phenylethyl)-1,2,4,5-tetrazines *via* a new synthesis of 1,2-dihydro-1,2,4,5-tetrazines from amidines, 719.
Quinazolines. Part XIV, the absolute configurations of *cis*- and *trans*-(+)- and (−)-decahydroquinazolines and 2-amino-octahydroquinazolines, 1597.
Reactions of cyclohexadienes. Part VIII, stereoselective and nonstereoselective syntheses of (±)-juvabione, 1469.
Spirans. Part VII, three isomeric grisan derivatives from the oxidative cyclisation of benzylidenebis-2-naphthol, 1557.
Steric effects in the *C*-alkylation and ring expansion of coumarins by diazomethane, 897.
Steroidal sulphur compounds. Part VI, steric effects in the pyrolytic elimination of sulphinate esters, 81.
Structural assignments of some 2,2,4-trisubstituted 1,3-dioxolans, 263.
Synthesis, configuration and dehydration of some 1-alkyl- and aralkyl-3-methyl-4-*o*-tolylpiperidin-4-ols, 135.
The stereochemistry and reactions of some 3,4-disubstituted chromans, 1006.
Steroids. Part IX, enamines from 6α-azidocholest-4-en-3-one and 2β-azidocholestan-3-one, 1188. Part X, boron trifluoride-catalysed rearrangements of 5,6-epoxy-3β-hydroxy- and 5,6-epoxy-3β-methoxy-steroids, 1626. Part XI, Westphalen-type rearrangements of 5α-hydroxy-4,4-dimethyl-steroids, 2273.
Part XIII, pyrolysis of maleic anhydride and maleic ester adducts of 9,11-epoxy-5,7-dienes, 508.
Part XXXIV, 17β-hydroxy-5β,14α,17α-pregnan-20-one and related compounds, 558. Part XXXV, removal of the 4-methyl groups in 4,4,14α-trimethyl-steroids: conversion of lanosterol into 14α-methylcholest-4-en-3-one, 1443. Part XXXVI, some 13,17-secoandrostanes, 1513. Part XXXVII, preparation of the epimeric 2-hydroxy-19-nor-5α-cholestanes, 1893.
and arynes. Part III, reactions of arynes with ring A aromatic steroids and steroidal 1(10),9(11)-dienes. Aryne chemistry. Part XXVI, 2493.
and Walden inversion. Part LXVII, substitution reactions of the 19-nor-5α-cholestan-2-ols, 1121. Part LXVIII, a re-examination of the substitution reactions of the 5α-cholestan-3-ols, 1124.
aromatic. Part IV, chromium trioxide oxidation of some oestra-1,3,5(10),9(11)-tetraenes, 1706.
conformational free energy differences in. Part IV, conformational preference of the [$^2H_3$]methyl group, 2027. Part V, equilibration of 5α- and 5β-androstan-6-one derivatives structurally modified in ring D, 2421.
microbiological hydroxylation of. Part I, proton magnetic resonance spectra of ketones, alcohols and acetates in the androstane, pregnane, and oestrane series, 250.
synthetic. Part X, preparation of (3*S*)- and (3*R*)-spiro-[5α-cholestane-3,2′-oxiran] and their corresponding 2α-methyl and 2,2-dimethyl analogues, 731. Part XI, stereochemistry of the Tiffeneau–Demjanov ring expansion of 5α-cholestan-3-one, 736.
urinary. Part VIII, an exploration of routes to pregnane-20α,21-diol derivatives, 1498.
Androsta-2,4-diene-1,17-dione, 1065.
A novel steroidal aromatization reaction, 513.
Applications of chromium(II) chloride. Part V, the reduction of some nitro-steroids, 1182.
Arylazo-steroids. Part VI, optical rotatory dispersion spectra of geometrical isomers of arylazoalkanes, 106.
Circular dichroism and optical rotatory dispersion of some hexahydroindanone derivatives; methyl- and methylene-substituted steroid ketones, 423.
Components of *Chionographis japonica* Maxim. Part IV, structures of chiograsterone and isochiograsterone, two new sterols from *Chionographis japonica* Maxim., 910.
Conformational effects in 20-oxosteroids, 57.
transmission. Part II, the effect of a 7,8-double bond on the enol acetylation properties of 3-oxo-5β-steroids, 2121.
Cyclisation of unsaturated bases derived by Hofmann degradation of perhydroazepines: a convenient synthesis of aza-steroids from steroidal ketoximes, 188.
Cycloaddition of dichloroketen to some steroid olefins, 1829.
Elimination reactions and configurations of 1-methylcyclohexyl derivatives, including steroid analogues, 182.
Experiments in steroid synthesis: oestrone, 10.

Steroids (*contd.*)
D-Homo-steroids. Part I, derivatives monosubstituted in ring D, 1454. Part II, a study of the mechanism of base-catalysed D-homoannulation of 3β-17α-dihydroxy-5α-pregnan-20-one, 2045.
Hydrocyanation. Part VIII, conjugate hydrocyanation of steroidal 2β-unsaturated carboxylic acid derivatives, 2347.
Hydroxy-steroids. Part XIII, 5β-ergosta-7,22-dien-3-one and related compounds, 1052. Part XIV, the acid-catalysed ring opening of 5,6-epoxides in a largely non-aqueous medium, 2325. Part XV, a quantitative study of the epoxidation of 3-substituted cholest-5-enes, 2330.
Investigations on the biosynthesis of steroids and terpenoids. Part II, role of 24-methylene derivatives in the biosynthesis of steroids and terpenoids, 775.
19-Nor and aromatic steroids. Part I, the cleavage of 3-oxygenated-2β,19-ethers in the cholestane series, 1437.
Pyrolysis of 17-oxygenated 16-methylene-20-oxosteroids. Part I, formation of 2-methylandrostano[17,16-*c*]-furans, 1344. Part II, oxidative cleavage of 2′-methylandrostano[17,16-*c*]furans, 1349. Part III, preparation and pyrolysis of 17α-acetoxy-17β-methyl-16-methylene-17a-oxo-D-homoandrostanes, 1352.
Reactions of Δ^7-steroids. Part III, conformational transmission effects in the methylation of 5β-cholest-7-en-3-one, 2117.
Some steroid pyrophosphates, 1889.
Steroidal analogues of unnatural configuration. Part I, 4,4,14α-trimethyl-19(10 → 9β)*abeo*-10α-pregn-5-enes from cucurbitacins, 1592.
Steroidal sulphur compounds. Part VI, steric effects in the pyrolytic elimination of sulphinate esters, 81. Part VII, pyrolysis and chiroptical properties of 3-alkylsulphinyl-5α-cholestanes, 833.
Steroid conjugates. Part II, synthesis of 5β-pregnane-3α-20α-diol 20-monosulphate, 2266.
Structures of physalin A and physalin B, 13,14-seco-16,24-cyclo-steroids from *Physalis alkekengi* var. *Francheti*, 664.
Studies in the steroid group. Part LXXX, preparation of 2- and 16-oxo-, and 3,16- and 2,16-dioxo-5α-androstane and 2-oxo-5α-cholestane, 244.
Transformation of the steroidal sapogenin side chain. Part I, reactions of 9(11)-dehydrohecogenin acetate with nitrous acid and with paraformaldehyde, 1977.
Stilbene analogues which fail to undergo photocyclisation to phenanthrene analogues. Studies in photochemistry. Part IX, 172.
Stobbe condensation of phenyl, *p*-anisyl, and *p*-chlorophenyl isopropyl ketones with diethyl succinate. γγ-Di-substituted itaconic acids. Part V, 620.
synthesis of 17-ketones by the. Potentially carcinogenic cyclopenta[*a*]phenanthrenes. Part IV, 1266.
Methoxynaphthaldehydes as constituents of the heartwood of *Diospyros quiloensis* and their synthesis by the Stobbe condensation, 626.
Structures. Analysis of structural characteristics of chemical compounds in a large computer-based file. Part I, non-cyclic fragments, 990.
Styrene, 2,3,4,5,6-pentafluoro-, nucleophilic replacement reactions of. Aromatic polyfluoro-compounds. Part XLIX, 1271.
Succinate, diethyl, Stobbe condensation of phenyl, *p*-anisyl, and *p*-chlorophenyl isopropyl ketones with. γγ-Di-substituted itaconic acids. Part V, 620.
Sugars, branched-chain. Part X, the synthesis of branched chain amino-sugars, 1954.
thio-. Part IV, thio-analogues of 3,6-anhydro-sugars: a proof of the configuration of 3-thio-D-glucose, 707. Part V, rates of the nucleophilic substitution reactions of some 1,2:5,6-di-*O*-isopropylidene-3-*O*-tosyl-α-D-hexoses with potassium thiobenzoate, 712.
A synthesis of 2-*O*-methyl-L-ribose, 1691.
Chemical modification of trehalose. Part II, synthesis of the *galacto*-analogue of trehalose, 749.
Cyanogen-induced synthesis of ^{18}O-labelled β-ribofuranose 1-phosphate and its acid-catalysed hydrolysis, 1191.
Glycosides. Part IV, 3,4,6-tri-*O*-acetyl-2-*O*-benzyl-α-D-glucopyranosyl bromide, 1742.
Selective benzoylation of methyl 2-benzamido-2-deoxy-α-D-glucopyranoside, a convenient preparation of derivatives of 2-amino-2-deoxy-D-galactose, 1336.
Structure of saccharide osazones, 2567.
Studies on the synthesis of methyl 2,3-anhydro-4,6-*O*-benzylidene-β-D-allopyranoside and -mannopyranoside, and their reaction with sodium azide, 1961.
Synthesis of some *N*-substituted methyl 2,3-dideoxy-2,3-epimino-β-D-lyxofuranosides, 1385.
The reaction of ammonia with acylated disaccharides. Part IX, acetyl derivatives of melibiose, 1908.
The synthesis of methyl β-D-lyxofuranoside derivatives bearing a fused oxazoline ring, 1402.
Sulphamic acids, aroyl- and arylsulphonyl-, 515.
Sulphenyl chlorides. Some pyrazolesulphenyl chlorides and derivatives, 78.
Sulphides. Sporidesmins. Part X, synthesis of polysulphides by reaction of dihydrogen disulphide with disulphides and thiols, 432.
Sulphinic acids. Reduction of benzyl sulphonyl (sulphone) intermediates to sulphinic acids. Synthesis of hypotaurine, and of L-cysteine and L-homocysteine sulphinic acids, 270.
Sulphinyl-oxygen, neighbouring-group participation by. Part III, stereomutations at the sulphur atom in norbornene disulphoxides, 572.
Sulphonamides, *N*-acetyl-*N*-trichloromethylsulphenylarene-, 225.
N-halogeno-*N*-sodioalkane-, synthesis of, 2087.
Organometallic reactions. Part XVIII, the reactions of *N*-sulphinyltoluene-*p*-sulphonamide and of *N*-(2,2,2-trichloroethylidene)toluence-*p*-sulphonamide with some tributyltin-oxygen and -nitrogen compounds, 1570.
Sulphonic acids, 1,2,4-triazole-3, synthesis of, by oxidation of 1,2,4-triazoline-3-thiones. Triazoles. Part XI, 2403.
Sulphonohydrazides and related compounds. Part XII, some arylsulphonyl derivatives of carbonohydrazide and related hydrazides, 2629.
Sulphonyl (sulphone) intermediates, benzyl, reduction to sulphinic acids. Synthesis of hypotaurine, and of L-cysteine and L-homocysteine sulphinic acids, 270.
Sulphoxides. Chemistry of cephalosporin antibiotics. Part XVI, configurational and conformational analysis of deacetoxy-Δ^2- and -Δ^3-cephalosporins and their corresponding sulphoxide isomers by nuclear magnetic resonance, 340.

Sulphoxonium salts, aryloxy-, synthesis of, 682.
Sulphur, bivalent, nucleophilic substitution at. Part II, trans-sulphenylation reactions of γ-hydroxyalkyl 2-nitrobenzenesulphenates, 2142.
Addition of chlorine to the cyanogen bond. Chlorothio-(dichloroformimido)cyanamide, 875.
Steroidal sulphur compounds. Part VI, steric effects in the pyrolytic elimination of sulphinate esters, 81. Part VII, pyrolysis and chiroptical properties of 3-alkylsulphinyl-5α-cholestanes, 833.
Thio-analogues of 5,6-dihydrouridine, 2444.

T

Tanacetum, *Juniperus*, and *Thuja* species, biosynthesis of thujane derivatives in. Terpene biosynthesis. Part II, 2689.
Tautomerism, a study of pyrazolin-5-one. Part IV, natural abundance carbon-13 nuclear magnetic resonance spectra, 1842.
Tectorigenin and irigenin. Synthesis of isoflavones. Part V, 1219.
Tellurium. Preparation, reactions, and structure of 5,10-epoxy-, 5,10-epithio-, 5,10-episeleno-, and 5,10-epitelluro-5,10-dihydroarsanthren, 810.
Terpenes, complexes of, with transition metals. Part I, the reactions of *cis*- and *trans*-ocimene and of myrcene with palladium(II), 2196. Part II, reactions of linalyl and nerolidyl acetates, limonene, and the pinenes with disodium tetrachloropalladate(II), 2200. Part III, dimerisation by means of tetrakis(triphenylphosphine)palladium, 2203.
the chemistry of. Part XI, volatile products of the photolysis of (+)-*cis*-caran-5-one, 1447.
A chemical model for a possible oxidative rearrangement in the biosynthesis of triterpenes: the rearrangement of 7α,8α- and 8,9-epoxytirucallanes, 1503.
Cope rearrangement of some germacrane-type furan sesquiterpenes. Part I, 1142. Part II, relationship between conformations of carbocyclic ten-membered rings in germacrane-type furan sesquiterpenes and the stereochemistry of their Cope rearrangement products, 2697. Part III, rearrangement of *cis*,-*trans*-cyclodeca-1,5-diene derivatives, 2704.
Crystal structure and absolute configuration of the diterpenoid, methyl 6α-bromo-12-methoxy-7-oxopodocarpate, 887.
Diterpenoids of *Leonotis* species. Part III, 8β-hydroxymarrubiin from *L. dysophylla* Benth., 1656.
Investigations on the biosynthesis of steroids and terpenoids. Part II, role of 24-methylene derivatives in the biosynthesis of steroids and terpenoids, 775.
Microbial transformation of sesquiterpenoids. Part II, hydroxylation of liguloxide with *Mucor parasiticus* Bain, 2548.
Pimarane diterpenes from *Cleistanthus schlechteri*, 2536.
Sesquiterpenes of *Lauraceae* plants. Part I, components of *Neolitsea aciculata* Koidz., 973. Part II, neosericenine, a component of the leaf of *Neolitsea sericea* Koidz., 1547.
Some free-radical addition reactions of pin-2-ene, pin-2(10)ene, and thuj-4(10)-ene, 258.
Structure of the limonoid triterpene zapoterin, 694.
Studies in terpenoid biosynthesis. Part VI, the stereochemistry of some stages in tetracyclic diterpene biosynthesis, 2601.
Terpene biosynthesis. Part II, biosynthesis of thujane derivatives in *Thuja*, *Tanacetum*, and *Juniperus* species, 2689. Part III, biosynthesis of (+)- and (−)-camphor in *Artemisia*, *Salvia*, and *Chrysanthemum* species, 2694.
Terpenoids. Part XV, structure and absolute configuration of oridonin isolated from *Isodon japonicus* and *Isodon trichocarpus*, 1674. Part XVI, chemical conversion of oridonin into isodocarpin, 1681
Part LXVI, simultaneous functionalization of the angular 10- and 13-methyl groups in 11β-hydroxylanostan-3β-yl acetate by oxidation with lead tetra-acetate–iodine, 1089.
The chemistry of triterpenes and related compounds. Part XLVII, clarification of the nature of the tetracyclic triterpene acids of elenic resin, 739.
Triterpenoids from *Entandrophragma cylindricum* Sprague. Part I, structures of sapelins A and B, 311.
Terremutin, the synthesis and stereochemistry of. Quinone epoxides. Part VI, 1945.
Tetrabenzporphyrin system, a route to the, and the chemistry of 1,3,4,7-tetramethylisoindole, 1251.
Tetracyanoethylene. A study of some reactions of the intermediate isolated from the *NN*-dimethylaniline-tetracyanoethylene reaction, 1390.
The formation of malononitrile derivatives in the reaction of tetracyanoethylene with *NN*-dialkylanilines, 1394.
Tetracycline studies. Part III, trimethylsilyl derivatives of tetracyclines, 636.
Tetrahydro-4*H*-pyran-4-one, a convenient preparation of, 2401.
Tetralones. Reactions of tetrahalogeno-1,2-benzoquinones. Part III, reaction of tetrachloro-1,2-benzoquinone with tetralones and naphthols: pathway to the condensates, 1257.
Tetrazaporphins, preparation and photochemistry of some, 175.
Tetrazines. Preparation of *meso*-, (±)-, and optically active forms of 3,6-bis-(1-hydroxy-1-phenylpropyl)- and 3,6-bis-(1-hydroxy-1-phenylethyl)-1,2,4,5-tetrazines *via* a new synthesis of 1,2-dihydro-1,2,4,5-tetrazines from amidines, 719.
Thallium. Oxidative rearrangement of olefins by thallium(III) acetate. Part I, oxidative rearrangement of chalcones, 119. Part II, synthesis of isoflavones, 125.
Thebaine. Novel analgesics and molecular rearrangements in the morphine-thebaine group. Part XVII, compounds related to the thebaine–maleic anhydride adduct, 560.
Thermolysis of 1,2,3-benzotriazin-4(3*H*)-one, 2070.
Pyrolysis of maleic anhydride and maleic ester adducts of 9,11-epoxy-5,7-dienes. Steroids. Part XIII, 508.
of 17-oxygenated 16-methylene-20-oxosteroids. Part I, formation of 2-methylandrostano[17,16-*c*]furans, 1344. Part II, oxidative cleavage of 2′-methylandrostano[17,16-*c*]furans, 1349. Part III, preparation and pyrolysis of 17α-acetoxy-17β-methyl-16-methylene-17a-oxo-D-homoandrostanes, 1352.

Thermolysis (*contd.*)
Thermal decomposition of t-butyl 2-nitrobenzenesulphenate, 60.
of phosphorothioates, 523.
Thermally induced reactions of 10-diazoanthrone with alkanes, 1851.
Thermal rearrangement of nickel 1-substituted tetradehydrocorrins, 1289.
The thermal decomposition of quaternary ammonium hydroxides. Part IV, rearrangement of the methohydroxides of *N*-(α-substituted benzyl)-*N*-methylanilines, 2276.
1,2,3-Thiadiazole derivatives. High resolution mass spectrometry. Part VII, 2042.
Thiathiophthens. Studies of heterocyclic compounds. Part VIII, direct conversion of 4*H*-thiopyran-4-thiones into 6a-thiathiophthens and 3-acylmethylene-3*H*-1,2-dithioles, 2412.
1,4-Thiazepines, the rearrangement of penicillanic acid derivatives to. Studies related to penicillins. Part IV, 2089.
Thiazolochromones. Pharmacologically active 4-oxo-4*H*-chromen-2-carboxylic acids (2-carboxychromones). Part I, the synthesis of 4-oxo-4*H*-chromen-2-carboxylic acids containing a fused thiazole ring, 1553.
Thiazolo[4,5-*d*]pyrimidine, synthesis of derivatives of. Part II, 2478.
Thieno[2,3-*b*][1]benzothiophen and thieno[3,2-*b*][1]benzothiophen. Part I, preparation, 2431.
Thieno[3,2-*f*]quinoline, some substitution reactions of, 2334.
Thioacetate ion, reaction of *N*-α-chlorobenzylidene-*N'*-(2,4- and 4,2-halogenoiodophenyl)hydrazines with, and their synthesis, 2106.
Thiobenzoic *O*-acid, glycerol esters of, and thioglycerol esters of benzoic acid, 467.
Thiocarbonohydrazide. Heterocyclic compounds from urea derivatives. Part XVII, reactions of 1-phenylcarbonohydrazide and 1-phenylthiocarbonohydrazide with carbodi-imides, 26.
2-Thiocytosine and cytosine, direct synthesis of nucleosides of. Transfer RNA components. Part I. Nucleosides. Part X, 1109.
Thioformylindolizines. Studies of heterocyclic compounds. Part VII, 145.
Thioglycerol esters of benzoic acid and glycerol esters of thiobenzoic *O*-acid, 467.
Thiols. Sporidesmins. Part X, synthesis of polysulphides by reaction of dihydrogen disulphide with disulphides and thiols, 432.
Thiones. Triazoles. Part XI, synthesis of 1,2,4-triazole-3-sulphonic acids by oxidation of 1,2,4-triazoline-3-thiones, 2403.
Thiophens and pyrroles, 3-cyano-4-hydroxy-, carbamic esters of. The synthesis of potential insecticides. Part III, 2409.
3-aryl-, metalation and halogen-metal exchange in, 1464.
Addition of a functionalized isoprene unit to an allyl alcohol. Part II, reactions with furylmethanol and thienylmethanol and synthesis of torreyal and dendrolasin, 220.
Condensed thiophen ring systems. Part III, a new synthesis of benzo[*b*]thiophen-2(3*H*)- and -3(2*H*)-ones and some reactions of benzo[*b*]thiophen-2(3*H*)-one with dimethyl sulphate in the presence of base, 1926. Part IV, synthesis, reactions, and stability of 2-phenyl-3-benzo[*b*]thienyl-lithium and related compounds, 2592.
Mechanism of oxidative ring closure of compounds of the buta-1,3-diene-1-thiol type with halogens to give thiophen derivatives, 914.
Photochemical cyclisation of some iodophenyl- and iodothienyl-(thienyl)ethylenes, 2504.
The synthesis, spectra, and reactions of some *S*-alkylthiophenium salts, 1764.
4*H*-Thiopyran-4-thiones, direct conversion into 6a-thiathiophthens and 3-arylmethylene-3*H*-1,2-dithioles, Studies of heterocyclic compounds. Part VIII, 2412.
Thiopyrazolones, 4-alkyl-, carbamic esters of. The synthesis of potential insecticides. Part II, 445.
Thiopyridine, 2,3,5,6-tetrachloro-4-methyl-, and 2,3,5,6-tetrachloro-4-mercaptopyridine, some reactions of. Polyhalogenoaromatic compounds. Part XI, 193.
Thiopyrilium salts. The dithiole series. Part IV, syntheses of dithiolylidene ketones and 1,6,6a*S*(IV)-trithiapentalenes from dithiolylium salts and of analogous compounds from pyrylium and thiopyrylium salts, 1202.
Thiosemicarbazone and amidinohydrazone derivatives of some 1,4-naphthoquinones, 1993.
Thiosemicarbazones. Oxidative cyclisation of ketone thiosemicarbazones. Part I, 4-methyl- and 4-aryl-thiosemicarbazones, 63. Part II, derivatives of phenoxyacetone, 323.
Thuja, *Tanacetum,* and *Juniperus* species, biosynthesis of thujane derivatives in. Terpene biosynthesis. Part II, 2689.
Thuj-4(10)-ene, pin-2-ene, and pin-2(10)ene, some free-radical addition reactions of, 258.
Tiffeneau–Demjanov ring expansion of 5α-cholestan-3-one, stereochemistry of. Synthetic steroids. Part XI, 736.
Tin. Organometallic reactions. Part XVII, some exchange and addition reactions of aminodimethyltin compounds, 759. Part XVIII, the reactions of *N*-sulphinyltoluene-*p*-sulphonamide and of *N*-(2,2,2-trichloroethylidene)toluene-*p*-sulphonamide with some tributyltin-oxygen and -nitrogen compounds, 1570.
Organotin chemistry. Part V, structure of the dialkyltin methoxide halides in solution: an analogy with the Grignard reagent, 821. Part VII, functionally substituted distannoxanes and oligostannoxanes, 2030. Part VIII, functionally substituted distannathianes and tristannathianes, 2035.
The reaction between nitrosyl chloride and aryltrimethylstannanes. A new method of preparing aromatic nitroso-compounds, 1717.
Tirucallanes, 7α,8α- and 8,9-epoxy-, the rearrangement of: a chemical model for a possible oxidative rearrangement in the biosynthesis of triterpenes, 1503.
Titanium alkoxides, insertion reactions of, with isocyanates and carbodi-imides, 132.
Toluenes, nitrate esters as intermediates in the oxidation of by ammonium cerium(IV) nitrate, 1630.
Toluene-*p*-sulphonates of *exo*- and *endo*-17-norkauran- and 17-norphyllocladan-16-ols, buffered acetolyses of the, 1148.
Torreyal and dendrolasin, synthesis of. Addition of a functionalized isoprene unit to an allyl alcohol. Part II, 220.
Transition metals, complexes of terpenes with. Part I, the reactions of *cis*- and *trans*-ocimene and of myrcene with palladium(II), 2196. Part II, reactions of linalyl and

Transition metals (*contd.*)
nerolidyl acetates, limonene, and the pinenes with disodium tetrachloropalladate(II), 2200. Part III, dimerisation by means of tetrakis(triphenylphosphine)palladium, 2203.
Trehalose, chemical modification of. Part II, synthesis of the *galacto*-analogue of trehalose, 749.
Triazenes, diaryl-, and 1,2,3-benzotriazines, mass spectra of, 1238.
Triazines and related products. Part III, synthesis and rearrangement of 3,4-dihydro-4-imino-1,2,3-benzotriazines, 765. Part IV, methylation of 3-aryl-3,4-dihydro-4-imino-1,2,3-benzotriazines, 2284. Part V, the structure of some red *N*-alkyl-1,2,3-benzotriazines, 2289. Part VI, synthesis and properties of 4-amino-2(2*H*)-imino-*s*-triazino[1,2-*c*][1,2,3]-benzotriazines, 2298. Part VII, reductive fission of 1,2,3-benzotriazines with hydrazine and Raney nickel, 2308.
Formation of 2-imino-1,4-benzodioxan and its trimerisation to give a derivative of 1,3,5-triazine, 1296.
Triazoles. Part XI, synthesis of 1,2,4-triazole-3-sulphonic acids by oxidation of 1,2,4-triazoline-3-thiones, 2403.
phenyl-1,2,3-, oxidation of phenylglyoxal dihydrazones to, 2167.
Heterocyclic analogues of cyclopentadienylidenecycloheptatriene derived from 1,3,4-oxadiazole and 1,2,4-triazole, 807.
2-Oxazolin-4-ones and their conversion into 3-hydroxymethyl-1,2,4-triazoles, 1515.
The Dimroth rearrangement. Part XII, transformation by alkali of 4-amino-3-benzyl-1,2,3-triazole and its 5-substituted derivatives into the corresponding 4-benzylamino isomers. Retrogression of this reaction in neutral solvents, 230.
Δ²-Triazolines derived from norbornene, formation and decomposition of. The chemistry of azidotropones. Part III, 1935.
***v*-Triazolo[1,5-*a*]pyridines,** rearrangement of quinoliziniumn-1-diazonium salts into. Quinolizines. Part XIII, 688.
5*H*-Tribenzo[*a*,*d*,*g*]cyclononene, 10,15-dihydro-2,3,7,8,12,13-hexamethoxy-, (cyclotriveratrylene), chemistry of. Part II, bromination, 465.
Trichothecan-3α-4β-diols. Phytotoxic compounds produced by *Fusarium equiseti*. Part IV, fission of trichothecan-3α,4β-diols by manganese dioxide, 369.
Trichothec-9-ene-3α,7α-diol, 4β,8α,15-triacetoxy-12,13-epoxy-. Phytotoxic compounds produced by *Fusarium equiseti*. Part VI, 378.
Trichothec-9-en-8-one, 4β,15-diacetoxy-3α,7α-dihydroxy-12,13-epoxy-, transformation products of, and the structures of nivalenol and fusarenone. Phytotoxic compounds produced by *Fusarium equiseti*. Part V, 375.
Tricycloquinazolines, disubstituted, novel isomerism of, and molecular orientations in carcinogenesis. Cyclic amidines. Part XXII, 2641.
Trifluoroethylene, reaction of dimethyl- and bis(trifluoromethyl)-phosphines with. Organophosphorus chemistry. Part X, 744.
1,6,6aS(IV)-Trithiapentalenes. The dithiole series. Part IV, syntheses of dithiolylidene ketones and 1,6,6aS(IV)-trithiapentalenes from dithiolylium salts and of analogous compounds from pyrylium and thiopyrylium salts, 1202.
Tritiation and deuteriation of aryl aldehydes in the formyl group and the synthesis of (±)-3,4-dihydroxy[β-$^3H_2$]-phenylalanine, 2049.
Tropolones, Mannich condensations of, 1323.
Tropones, azido-, the chemistry of. Part III, formation and decomposition of Δ²-triazolines derived from norbornene, 1935.
Tropylium and cycloheptatriene metal complexes. Part VI, tropone and alkoxycycloheptatriene complexes of tricarbonylchromium, 2315. Part VII, the preparation and ready ring contraction of tricarbonylcarbethoxytropyliumchromium, 2636. Part VIII, a study of directive effects in nucleophilic addition to substituted tricarbonyltropyliumchromiums, 2638.
Tryptamine, 5-hydroxy-, synthesis of 3-(2-aminoethyl)-5-hydroxyindene, the indene isostere of, 114.
of an analogue of, 3-amino-1,2,3,4-tetrahydro-6-hydroxycarbazole, 325.
Turraeanthin and turraeanthin A, conversion of, into simple meliacins, by a route involving oxidative rearrangement of probable biogenetic importance, 2280.

U

Ullmann condensation, *N*-arylazoles by. Synthesis of heterocyclic compounds. Part II, 85.
Uracils. Pyrimidine nucleosides. Part IV, reactions of 3-(β-D-ribofuranosyl)uracils, 1365. Part V, reactions of 3-(β-D-ribofuranosyl)uracils and related compounds, 1869.
Urea derivatives, heterocyclic compounds from. Part XVI, intereaction of carbonohydrazide and carbodi-imides, 19. Part XVII, reactions of 1-phenylcarbonohydrazide and 1-phenylthiocarbonohydrazide with carbodi-imides, 26. Part XVIII, adducts from aminoguanidines and aroyl isothiocyanates and their cyclisation, 1805. Part XIX, adducts from diaminoguanidines and aroyl isothiocyanates and their cyclisation, 1813.
Uridine, 5,6-dihydro-, thio-analogues of, 2444.
Ursolic acid. Conversion of α- and β-amyrin into ursolic and oleanolic acids respectively. A synthesis of oleanolic acid, 678.

V

Versimide, a matabolite of *Aspergillus versicolor*, 2572.
Vilsmeier–Haack formylation of 1-substituted pyrroles. Pyrrole studies. Part XV, 2563.
Vilsmeier reagents, reactions of, leading to 3-formyl-1,6-diazaindene and -1,4-diazabenz[*f*]indene. Diazaindenes (azaindoles). Part III, 498.
Vinyl-aldehydes, β-chloro-, the stereochemistry of, 2484.
Vinylamines. Part IX, reaction of cyclohexanone enamines with αβ-unsaturated ketones, 2377.
Vinyl fluoride. Free-radical additions to unsaturated systems. Part XVII, reaction of trifluoroiodomethane with mixtures of ethylene and vinyl fluoride and of ethylene and propene, 414.
Vinyl sulphonic esters, reactivity of. Part I, addition of *O*-sulphenyl arenesulphonates to acetylene derivatives, 2617. Part II, cyclisation of arylthiovinyl sulphonates to benzo[*b*]thiophen derivatives, 2621. Part III, reactivity of arylthiovinyl sulphonates with nucleophiles, 2625.

W

Walden inversion and steroids. Part LXVII, substitution reactions of the 19-nor-5α-cholestan-2-ols, 1121. Part LXVIII, a re-examination of the substitution reactions of the 5α-cholestan-3-ols, 1124.

Westphalen-type rearrangements of 5α-hydroxy-4,4-dimethyl-steroids. Steroids. Part XI, 2273.

Withania somnifera and ***Punica granatum***, biosynthesis of some alkaloids of, 1792.

Wittig reactions of 1,2-dihydro-1,2-bis(triphenylphosphoranylidene)benzocyclobutene and benzocyclobutene-1,2-quinone. The synthesis of dibenzo[*a*,*c*]benzo[3,4]cyclobuta[1,2-*f*]cyclo-octene, 2137.

X

Xanthen and fluorene derivatives, formation of, by competitive 1,4- and 1,3-cycloadditions of quinonylmethyl anions to quinones, 722.

Xanthenyl chloride, addition of, to the ethylenes. Reactions with asymmetric diarylethylenes and diarylethanes. Part XIV, 1923.

Xanthones. Chemical investigations on *Cassia occidentalis* Linn. Part I, isolation and structure of cassiollin, a new xanthone, 1285.

Extractives from Guttiferae. Part XVI, biogenetic-type synthesis of xanthones from their benzophenone precursors, 392.

Xanthoria parientia (L.) Beltram, the minor anthraquinones of, the chlorination of parietin, and the synthesis of fragilin and 7-chloro-emodin (' AO-1 '), 307.

***X*-Rays.** A reference list of organic structures whose absolute configurations have been determined by *X*-ray methods. Part IV, 2340.

Xylocarpus granatum Koenig, limonoids from, 211.

Y

***N*-Ylides** and *N*-imines, 1,3-dipolar cycloaddition reactions of cyanoacetylenes with. Chemistry of cyanoacetylenes. Part V, 481.

Ynamines. Chemistry of cyanoacetylenes. Part IV, preparation and reactions of cyano-ynamines and the corresponding cyano-enamines, 476.

Z

Zapoterin, limonoid triterpene, structure of, 694.

Zinc-acetic acid catalysed ring contraction of pyrimidines to pyrroles, 1658.

Reactions of co-ordinated ligands. Part V, the mechanisms of the hydrolyses, ester-exchange reactions, deuteriations, and racemisation of the copper(II), zinc(II), magnesium(II), and palladium(II) complexes of *N*-(alkoxycarbonylalkyl)salicylideneimines, 1183.

Zygosporin. Studies on the metabolites of *Zygosporium masonii*. Part I, structure of zygosporin A, 38. Part II, structures of zygosporins D, E, F and G, 45.

Zygosporium masonii, studies on the metabolites of. Part I, structure of zygosporin A, 38. Part II, structures of zygosporins D, E, F and G, 45.

JOURNAL OF THE CHEMICAL SOCIETY

The scale and cost of present day publication make it necessary to ask authors to co-operate with the Society to the full. To facilitate this the Society will publish a sequence of notices to authors within these covers. It is intended to deal with all major aspects of the preparation, submission, content, and handling of articles intended for the *Journal*. Careful attention to these notices will help authors to have their work published more easily and rapidly.

NOTICES TO AUTHORS—No. 1/1968

General Policy

The Journal of the Chemical Society is designed as a medium for reporting original contributions to new chemical knowledge. Articles which do not advance knowledge (*i.e.*, reviews) will not normally be considered for publication in the *Journal*, although the Society accepts that it is sometimes necessary to draw together the detail and argument of a long series of papers in a short introductory or summarising paper.

The *Journal* is intended to deal with any branch of chemistry, and a liberal view is encouraged with regard to contributions on border-line subjects, *e.g.*, the borders between ' pure ' chemistry and ' applied ' chemistry, biochemistry, analytical chemistry, or chemical physics. The principal criterion is whether the contribution contains matter of general chemical interest and novelty.

Experimental chemical facts are admitted for publication, even if divorced from theoretical interpretation or evaluation; the account should, however, be as concise as possible. Equally, purely theoretical papers, devoid of experimental accounts, are welcomed.

Submission of Articles

Typescripts should be addressed to ' The Editor, The Chemical Society, Burlington House, London W.1.'

The *Journal* is published in three subject-oriented sections:

Section A, Inorganic, Physical, and Theoretical
Section B, Physical Organic
Section C, Organic

and authors are requested to indicate, at the time they submit a typescript, the section of the *Journal* for which it is intended. Whenever possible their wishes will be met, but if this proves impossible the Editor will communicate with the authors before the article appears in print.

Two copies of the typescript (a top-copy and a good-quality carbon copy) are required.

Conditions Governing Acceptance

Contributions that have appeared or have been accepted for publication with essentially the same content in another journal or freely available printed work will not be published in the *Journal* of the Society except by permission of the Council. This restriction does not apply to results previously published in *materially abbreviated* form as a paper presented at a symposium, etc., as a communication to *Chemical Communications*, as a letter to the Editor of other periodicals, or as a Patent.

Contributions are accepted by the Society on the understanding that the authors (*a*) have obtained any necessary authority for publication, and (*b*) will, if requested, surrender their copyright to the Society. Attention is drawn to the following extract from the Society's Bye-Laws:

> 79. (i) Every Fellow who, with a view to its publication by the Society, submits a paper or other communication shall by so doing undertake:
>
> (*a*) that his communication has not been published and that he will not permit its publication before it is accepted or declined by the Society, and
>
> (*b*) that if it is accepted for publication the Society shall thereupon become entitled to the copyright therein and that he will, when called upon to do so, assign to the Society the said copyright, including sole right to print and publish in any form, in any language, and in any part of the world the whole or any part of his communication. The Council shall not refuse any reasonable request from an author to reproduce his own work elsewhere in whole or in part.
>
> The attention of every Fellow who submits a paper or other communication for publication shall be drawn to this Bye-Law.
>
> (ii) Every non-Fellow who submits any paper or other communication with a view to its publication shall be required to sign an undertaking in the terms set out above.

Authors are solely responsible for the factual accuracy of their contributions.

The Society reserves the right to retain all typescripts sent to it, and authors are therefore advised to keep copies. When contributions have been submitted for publication the authors are not at liberty, save by permission of the Society, to withdraw or delay them, or to publish them elsewhere until after publication by the Society.

Content of the *Journal*

Articles in the *Journal* are **NOT** divided into different classes (*e.g.* as Papers and Notes) nor are they subjected to different treatments or segregated within an issue.

All contributions, no matter how long or how short, are treated in the same way and are judged only on the criteria of

(i) originality and quality of scientific content

(ii) appropriateness of the length (or brevity) to that content of new science.

Notwithstanding its readiness to accept very short articles, the Society does not intend to permit fragmentation of a substantial piece of research work into a number of short publications. Unnecessary fragmentation will be a valid reason for rejection of manuscripts.

A clear distinction exists between a contribution to the *Journal* and an article submitted to *Chemical Communications*; the former is the definitive account of a completed piece of research, the latter is an urgent, preliminary, brief account of an important development of which the substantive account cannot yet be written.

Authorship of Articles

Publication in the *Journal* is a privilege of Fellowship of The Chemical Society. A contribution is therefore not normally considered for publication unless at least one of the authors is a Fellow of the Society, but in exceptional circumstances the Council is prepared to consider contributions submitted by non-Fellows.

Administration

Receipt of a contribution for consideration will be acknowledged immediately by the Editorial Office. The acknowledgment will indicate the unique *paper reference number* assigned to the contribution. Since this number is the basis of the Society's record of more than 3000 manuscripts per annum authors are particularly asked to quote it in all subsequent correspondence.

A further communication will be sent by the Editor to the author submitting the manuscript, after the referees have reported on it.

Refereeing

All contributions to the *Journal* are submitted to at least two referees. It is their duty to advise the Society (as opposed to the authors) on the scientific suitability of the contribution.

Referees' names are not disclosed to authors.

The referees' views are conveyed to the author by the Editor for consideration; then differences of opinion or emphasis are mediated by the Editor, by further referees or in the last resort by the Primary Journals Committee.

The Editor is empowered to accept contributions for publication on the recommendation of the referees.

Contributions recommended by the referees for rejection are considered individually at a meeting of the Primary Journals Committee, whose decision is final.

Notification of acceptance or rejection is sent by the Editor.

Layout of the Typescript

One copy of the typescript must be a top copy, typed on good quality quarto-size white paper in double-line spacing. Margins of at least 1½ inches must be left at the top, bottom, and left-hand side of each page.

The first page must be set out in the following order:

(*a*) Name and address for proofs

(*b*) Section of the *Journal* for which the contribution is submitted

An extra two line space

(*c*) Title of the article (NOT underlined, capitals for first letter of each noun or adjective only)

(*d*) The word ' By ' followed by the authors' names and the address where the work was carried out (NOT underlined); an asterisk (*) is to follow the name of the author who will deal with correspondence from readers

An extra two line space

(*e*) The summary (an essential part of every contribution), indented an extra ½ inch, double-line spacing

An extra line space

(*f*) The main text, first paragraph not indented but the first word or ' compound word ' doubly underlined for small capitals. A compound word is the whole of a multiple-part chemical name or the several names of the authors of a single reference.

Subsequent paragraphs should receive an indent before the first word.

The various sections of a contribution can be introduced by headings (Experimental, Results, etc.,) typed on separate lines against the left-hand margin. These headings will be in capitals, doubly underlined, but the heading ' Introduction ' will be omitted if it would come at the beginning of the main text.

Lists of references, displayed formulae, Tables, Schemes, the captions to illustrations, etc., must be set out on separate sheets of the typescript.

All pages, including Tables, of a typescript must be numbered serially.

NOTICES TO AUTHORS—No. 2/1968

Presentation of Papers

Every latitude, consistent with brevity, in the form and style of papers is permitted, and no pattern for either is prescribed. Certain elements are, however, common to all papers, and these are considered.

Organization of Material

Title.—The choice of a title for a paper is of the greatest importance, since it is from the title that the important key-words used in information retrieval are taken. Not only should the title clearly and accurately indicate the content of that paper but also it should be as specific as the content and emphasis of the work permits. Brevity in a title, though desirable, should be balanced against its accuracy and usefulness.

Abbreviations, symbols, and formulae are generally not permitted, and it is usual to spell out terms where necessary.

Reference to the preceding part of a series must be made as the reference (numbered 1) to the title in the form: 'The Chemistry of Vitamin B_{12}. Part VIII.[1] Controlled Potential Reduction of Vitamin B_{12a}.' [Reference to a preceding part in the references is in the form: Part VII, H. A. O. Hill, B. E. Mann, J. M. Pratt, and R. J. P. Williams, *J. Chem. Soc.* (*A*), 1968, 564. If the page number is unknown because the paper has still to be accepted, or is in the press, the paper number should be given.]

Summary.—Every paper for the *Journal* must be accompanied by a summary (50—250 words) setting out briefly and clearly the objects and results of the work. The summary should give a reader a clear idea of what the work has achieved and should be *independent* of the main text. This last point is of particular importance in connection with the names of compounds which, although they may be accompanied by a number which refers to a displayed formula in the body of the text, must be comprehensible without reference to this formula. Thus,

> Apetalactone, a new triterpene lactone isolated from *Calophyllum apetalum* Willd. has been shown to be 4,28-dihydroxy-3,4-secofriedelan-3-oic acid lactone (IIa).
>
> or
>
> Reaction of sodium hydride with ω-hydroxyalkyltriphenylphosphonium salts $Ph_3P^+[CH_2]_nOH\ X^-$ (I) has been investigated. The salt (I; $n = 1$, $X = 1$) gave triphenylphosphine and formaldehyde. The salt (I; $n = 2$, $X = 1$) gave triphenylphosphine oxide and ethylene. Similar reactions were carried out with ω-hydroxyalkyltriphenylarsonium (XIV) and ω-hydroxyalkyldimethylphenylammonium (XV) salts.

The summary should concern only the main subject of the work and its main conclusions; details of an involved argument or synthesis should not be included and, although classes of compounds prepared or discussed should be given rather than a list of compounds, key compounds in the work should be referred to.

Introduction.—This should give clearly and briefly, with relevant references, both the nature of the problem under investigation and its background.

Results and Discussion.—It is usual for the results to be presented first, and for them to be followed by a discussion of their significance. Only relevant results should be presented, and figures, tables, and equations should be used only for purposes of clarity and brevity. Data must not be reproduced in more than one form, *e.g.* in both figures and tables.

Experimental Section.—Descriptions of experiments should be given in detail sufficient to enable experienced experimental workers to repeat them; the degree of purity of materials should be given, as should the relative quantities used. Descriptions of established procedures are unnecessary. Standard techniques and methods used throughout the work should be stated at the beginning of the section. Apparatus should be described only if it is non-standard; commercially available instruments are referred to by their stock numbers (*e.g.* Perkin-Elmer 137 or Unicam SP 500 spectrophotometers). The accuracy of primary measurements should be stated. Unexpected hazards encountered during the experimental work should be noted. The detailed treatment of the Experimental section is dealt with in a forthcoming Notice to Authors.

Acknowledgements.—Contributors, other than co-authors, are acknowledged in a separate paragraph at the end of the paper; acknowledgements should be as brief as possible. Titles, Mr., Mrs., Miss, Dr., Professor, *etc.*, are given; degrees are not given. Organizations which operate on a commercial basis are not acknowledged.

Bibliographic References.—These are given on a separate sheet at the end of the manuscript and are referred to in the text by superior roman numerals. They must be distinguished from footnotes which are given at the bottom of the page to which they refer; they are referred to by an asterisk (*), dagger (†), *etc.* Bibliographic references and footnotes are the subject of Notice No. 3.

General Detail

Type Size.—It should be noted that since the Experimental section and the results are printed in smaller type than the theoretical part, division between the two should be clear-cut and frequent alternation is not advisable.

Brevity.—Because of the large volume of work submitted for publication, brevity in the presentation of papers is essential and, for this reason, certain tendencies are discouraged; these are as follows:

- (*a*) Unnecessary division of work into separate parts of a series. Papers are in no way discouraged solely on grounds of length.
- (*b*) Submission of fragmentary work when this can be included in a larger communication.
- (*c*) Historical introductory paragraphs in cases when a simple statement of the accepted present position suffices.
- (*d*) Undue elaboration of hypotheses.
- (*e*) Over-detailed and verbose exposition of ideas.
- (*f*) Excessive use of diagrams, for example, straight-line plots that can be adequately expressed as an equation together with, if necessary, a table of deviations.
- (*g*) Duplication of data as between text, tables, and figures, *etc.*

(*h*) Details of the preparation of simple derivatives such as esters, ethers, semicarbazones, *etc.*, and slight variations of essentially the same technique. (Unless the conditions are critical, quantities are superfluous, and only an indication of reagents and/or conditions is required.)

Spelling.—Standard English spelling is used (*Oxford English Dictionary*), although latitude with respect to alternative spellings for certain words is allowed. Where one form or the other of a particular spelling is adopted it should be used consistently throughout a paper.

Punctuation.—Although punctuation follows standard English practice, the following conventions are observed:

(*a*) A comma is placed before 'and' or 'or' in a series such as 'oxygen, sulphur, and selenium' or '$\lambda_{max.}$ 237, 295, and 343 nm.'

(*b*) Parentheses, square brackets, and braces are used, as necessary, in that order, *i.e.* {[( )]}.

(*c*) When a word is followed by a punctuation mark the parenthetical phrase must be inserted before the latter, *e.g.* 'm.p. 234° (decomp.),' and not 'm.p. 234°, (decomp.)'.

(*d*) A colon is used to separate a ratio, as in 1 : 20 —not a solidus 1/20.

(*e*) Parenthetical expressions of the same physical quantity in different units are separated by a comma (3·9 g, 0·1 mole) (30 ml, 1 mole); expressions of different physical quantities are separated by a semicolon (2·9N; 30 ml) (*d* 0·88; 8 ml).

Hyphenation.—Hyphens are used for two purposes: to divide and to compound.

Division. It is common practice to divide words, particularly when in a sequence, when one part is common to several of the words; in such cases, the hyphen, representing the point of attachment to the common part, is always inserted, *e.g.* 'the chloro-, bromo-, and fluoro-naphthacenes,' 'the *o*-, *m*-, or *p*-nitrotoluenes,' or 'the oxo-naphthalenes and -naphthacenes.' It is not good practice, however, to detach both a common prefix and a common suffix in a series, *e.g.* 'the dihydroxy- naphthalene- and phenanthrene-diones,' since confusion can arise.

'Sections' of class names such as diazo-ketone, alkyl-diamine, epoxy-nitro-sulphone, *etc.*, are linked by hyphens.

It is also Society usage to insert a hyphen after a prefix which ends in a vowel or y; the hydroxy-group, the aza-function, the carboxy-compounds, the nitro-derivatives, but the methyl group (note that hydroxy, acetoxy, carboxy, ethoxy, and methoxy are used and not hydroxyl, acetoxyl, carboxyl, ethoxyl, and methoxyl).

It is customary to separate a pair of the same letter when these letters (in the same fount) would not naturally fall together, *e.g.* butyl-lithium, iodo-octane.

Compounding. A hyphen is often necessary when words are compounded to form a single modifying adjective to precede the noun being modified, thus: 'a melting-point determination' or 'a free-radical chain mechanism.' A hyphen is not needed when adverbs are compounded, as in 'an electrically heated oven,' or for two-word chemical names such as 'nitric acid solution.'

Miscellaneous uses of hyphens. Hyphens are used to set apart numbers, configurational letters, Greek letters, and italicized prefixes: 1,2,5-trimethylcyclohexane, D-*gluco*-hexose, *s*-trinitrobenzene, β-chlorophenethylbenzene, tri-μ-carbonyl-bis(tricarbonyliron), and 3-methylpent-*trans*-2-ene.

Use of Italics.—As described below, italics are indicated in a typescript by single underlining. Particular attention should be paid to the following uses.

(*a*) Foreign words and phrases and Latin abbreviations are given in italics: *e.g.*, *in toto*, *in vivo*, *ca.*, *cf.*, *i.e.*, *etc.*

(*b*) In the names of chemical compounds or radicals italics are used for prefixes (other than numerals or symbols) when they define the position of named substituents, or when they define stereoisomers: other prefixes are printed in roman. (*Note:* Initial capital letters are not to be used with italic prefixes or single-letter prefixes: full points are not to be associated with letter prefixes.)

o-, *m*-, and *p*-nitrotoluenes, but *ortho*-, *meta*-, and *para*-compounds (*o*-, *m*-, and *p*- are used only with specific names; *ortho*-, *meta*-, and *para*- are used with classes), *s*-trinitrobenzene, *NN*-dimethylaniline, *trans*- and *cis*-hexane-1,2-diol, *gem*- and *vic*-diols, benzil *anti*-oxime, 3-*O*-methyl-L-*glycero*-tetrulose.

At the beginning of a sentence the first roman letter after the prefix is capitalized: 'D-*glycero*-D-*gluco*-Heptose was subjected . . .' and 'β-*p*-Tolylchalcone gave . . .'

(*c*) The scientific names of genera, species, and varieties are italicized.

(*d*) In references to periodicals their names or abbreviations are set in italics.

Note: Greek letters are not italicized, and should not therefore be underlined in typescripts.

Headings.—(*a*) Main sections (Experimental, Discussion, *etc.*): side-heading, small capitals, no final fullstop.

(*b*) Main side-heading: italics, initial capital letter for each noun and adjective, final fullstop and dash.

(*c*) Subsidiary side-heading: italics, first initial capital only, final fullstop but no dash.

(*d*) Further subdivision: by italic (*a*), (*b*), *etc.* (no following fullstop), and finally (i), (ii), *etc.* If (a), (b), *etc.* are used in front of a subsidiary side-heading, then for contrast these letters are not italicized.

Letters and prefixes which are ordinarily printed in italics are transferred for contrast into roman type in italicized phrases (see example below, where *O*-alkyl becomes O-*alkyl*).

Physicochemical symbols, however, remain in their prescribed form, and numerals and Greek letters are not italicized.

Examples:

EXPERIMENTAL

Preparation of Aliphatic Aldoximes and Ketoximes.—Acetoxime O-*alkyl ethers.* (*a*) Acetoxime (100 g) was dissolved . . .

Density (*d*) *of the Alcohol at* 295 K.—The series of aliphatic alcohols . . .

Note: In the above examples it should be noted that the type of print required to indicate italics, capitals, small capitals, *etc.* is shown by underlining; this convention must be strictly adhered to, *i.e.*

Single underlining for *italic* type
Double underlining for SMALL CAPITALS
Treble underlining for ORDINARY CAPITALS
Wavy underlining for **bold black** type

NOTICES TO AUTHORS—No. 3/1968

Bibliographic References and Footnotes

A clear distinction is made between bibliographic references and footnotes. The latter are used to present material which, if included in the body of the text, would disrupt the flow of the argument but which is, nevertheless, of importance in qualifying or amplifying the textual material. Such footnotes are referred to with the following symbols: *, †, ‡, §, ¶, ‖, *etc.* [*Note:* Since an asterisk is used to indicate the author to whom correspondence should be addressed, its use early on in a paper is not advised; a dagger (†) is preferred.]

Bibliographic References.—Reference to the source of statements in the text is made by use of ***superior numerals*** at the appropriate place. The references themselves are given as footnotes at the bottom of the corresponding page in the final printed text. It is thus *essential* that bibliographic references are numbered in the order in which they will appear.

When citation of a paper is repeated the numeral previously given to that reference is to be used also at the second citation; the footnote is not repeated.

The position of the superior numeral should be chosen with care, particularly when it does not follow an author's name. If placed adjacent to punctuation, the numeral should normally be placed after the punctuation mark, *e.g.* 'This compound was shown to be the dienone,[3] which . . . '. It may be necessary to modify this rule, however, to avoid confusion, thus: ' In this way the method was found to be suitable for lead [2], tin [3], bismuth [4], and mercury [5].'

Particular care is necessary where a reference number is likely to be confused with a superscript numeral indicating a power index: '. . . which gave a value of 2·3 cm^3 . . . ' should be written as ' . . . which gave a value [3] of 2·3 cm ' or ' . . . which gave a value of 2·3 cm (ref. 3) '.

Since it is usually difficult to print a table in a given position in the text, references within the table are best dealt with by taking the individual references into the printed footnotes to the tables and using a new reference number sequence therein. Should the references cited in the tables appear much earlier in the text, these earlier reference numbers may be used.

Journals. Journal titles must be abbreviated to the forms listed in Notice 4 of this series. The main principles which underlie these abbreviations are: (i) clarity to a chemist; (ii) a fullstop after each abbreviated word, but not after words in full; (iii) English and Latin adjectives have initial capital letters, other adjectives do not.

Books. Titles of books are cited in quotation marks, in upright letters, and the author(s), title, publisher, town, date (or edition, if more than one has been published), and page number (if required) must be given in that order:

C. J. M. Stirling, ' Radicals in Organic Chemistry,' Oldbourne Press, London, 1965, p. 69.

T. J. Suen, in ' Polymer Processes,' ed. C. E. Schildknecht, Interscience, New York, 1956, vol. X, p. 295.

Patents. Patents should be indicated in the form: B.P. 367,450, 367,455-7. U.S.P. 1,171,230. G.P. 436,112-4. Jap.P. 20,101. Dates are indicated thus: B.P. 666,776/1956. Patents which are applied for must always be given a year, *e.g.* B.P. Appl. 102/1968.

Reports and Bulletins, etc.

R. A. Allen, D. B. Smith, and J. E. Hiscott, ' Radioisotope Data,' UKAEA Research Group Report AERE-R 2938, H.M.S.O., London, 1961.

' Collected Papers on Methods of Analysis for Uranium and Thorium,' Geological Survey Bulletin 1006, U.S. Government Printing Office, Washington D.C., 1954.

Material presented at meetings.

N. N. Greenwood, Abstracts, Anniversary Meeting of the Chemical Society, Glasgow, 1965, C1.

N. S. Anderson and D. A. Rees, in ' Proceedings of the Vth International Seaweed Symposium,' ed. E. G. Young and J. L. McLachlan, Pergamon Press, Oxford, 1966, p. 405.

Theses.

A. D. Mount, Ph.D. Thesis, University of London, 1967.

Reference to unpublished material. For material presented at a meeting, congress, or before a society, *etc.*, but not published, the following form is used:

[1] A. R. Jones, presented in part at the XXth Congress of the International Union of Chemistry, Paris, September, 1960.

For material accepted for publication, but not yet published, the following form is used:

[2] A. R. Jones, *J. Amer. Chem. Soc.*, in the press.

If the paper has been submitted to the Society, the paper number should be given:

[3] A. R. Jones, *J. Chem. Soc.* (*A*), in the press (8/556).

For material submitted for publication but not yet accepted the following form is used:

[4] A. R. Jones, submitted for publication in *Angew. Chem.*

For personal communications the following form is used:

[5] G. B. Ball, personal communication. (*Note:* the form, G. B. Ball, private communication, is inappropriate.)

If material is to be published but has yet to be submitted the following form is used:

[6] Unpublished data.

Names.—The names and initials of all authors are always given in the reference footnote; they must not be replaced by the phrase *et al.* This does not prevent some, or all, of the names being mentioned at their first citation in the cursive text: initials are not necessary in the text.

For Chinese and Spanish authors all names should be given as in the original, since the patronymic is not always given last in these languages. If co-authors are to be collectively cited, as in 'Smith and his co-workers' or 'Smith *et al.*,' the latter form is inappropriate unless the individual name 'Smith' appears first among the authors named in the original.

Composite References.—Whenever possible, composite references should be used rather than a series of individual references. The style for composite references is as follows:

[1] A. B. Jones, *J. Chem. Soc.* (*A*), 1967, 234.

[2] A. B. Jones, *J. Chem. Soc.* (*A*), 1966, 123; 1967, 234.

[3] A. B. Jones, *J. Chem. Soc.* (*A*), 1966, 123; *J. Amer. Chem. Soc.*, 1956, **78**, 1234.

[4] A. B. Jones, *J. Chem. Soc.*, 1956, 234; A. B. Jones and C. D. Brown, *J. Chem. Soc.* (*B*), 1967, 234, 1077; 1968, 599.

[5] A. B. Jones, *J. Amer. Chem. Soc.*, 1956, **78**, 1234; A. B. Jones and C. D. Brown, *ibid.*, 1957, **79**, 567; A. B. Jones and E. F. Green, *ibid.*, p. 999.

If only one paper from a composite reference is required for citation later, then two numbers may be assigned to the first citation (*e.g.* Jones [1,2]); alternatively, long composite references may be divided by letters, *e.g.*:

(*a*) A. B. Jones, *J. Chem. Soc.* (*A*), 1954, 467; (*b*) A. B. Jones and C. D. Brown, *J. Chem. Soc.* (*B*), 1967, 234.

A. B. Jones, *J. Chem. Soc.* (*A*), (*a*) 1953, 267; (*b*) 1954, 1742; (*c*) *etc.*

A composite reference may cite a previous reference in the form:

[12] A. B. Jones, *J. Chem. Soc.*, 1956, 234; C. D. Brown, ref. 5.

(*Note: ibid.* is used only within a given reference and not to refer from one reference number to another: the abbreviated title for the journal should be repeated for separate reference numbers.)

Idem, loc. cit., and *op. cit.* are not used in references.

Abbreviations of Journal Titles.—Abbreviations for journal titles are constructed on the following general principles:

(*a*) When the full title consists of a single word it is not abbreviated: *Nature, Experientia, Tetrahedron.*

(*b*) In other cases the title or words selected from it are abbreviated as far as is consistent with the general principles:

(i) The abbreviated title should still enable the reader or librarian to identify the journal with ease; it should be readily expansible into the original or into full words near to the original. Accordingly, many words are unsuitable for abbreviation: *Acta, Bergvesen, Brewing, Cercetari, Dansk, Finishing, Folyoirat, Food, Istanbul, Sinica.*

(ii) The same word, if abbreviated, is always abbreviated in the same way, irrespective of the full title of the journal in which the word appears.

(iii) Nouns and adjectives derived directly from them receive the same abbreviation; initial capital letters are used for nouns, and small (lower case) initial letters for adjectives (unless they form the first word of the abbreviated title), except that for English and Latin titles adjectives are also given initial capital letters. Examples: Chemie *Chem.*, chemische(n) *chem.*, Chemistry or chemical *Chem.*, Chimie *Chim.*, chimique *chim.*, Chimie or chimica *Chim.*, Belgique *Belg.*, belges *belg.*

(iv) Related words not strictly covered by clause (iii) are differentiated. Examples: Chemistry and chemical *Chem.*, but Chemists in full; Engineering (adjective and noun) *Eng.*, but Engineers in full.

(v) Special sources of possible confusion require special treatment. Examples: *Ind.* for Industry and industrial, but India(n) in full; *Anal.* for Analele, *Analyt.* for Analytical, *Ann.* for Annals, Annales, Annalen, Annali, or Annual, but the full words for Anales, Analyst, and Annuaire.

(*c*) 'The', 'a', 'of', and 'and', as well as their equivalents in other languages, are omitted, except for rare cases where they seem essential for clarity, as in *Chem. and Ind.* (Chemistry and Industry, not Chemical Industry or Industrial Chemistry).

(*d*) All abbreviations are followed by a fullstop (full point); full words in references do not require to be followed by a fullstop.

(*e*) Names of countries are added, without punctuation, when they form part of the full title, as in *J. Chem. Soc. Japan* (Journal of the Chemical Society of Japan) or *Bull. Soc. chim. France* (Bulletin de la Societe chimique de France; the 'France' may not be omitted here as the list contains two other *Bull. Soc. chim.* as well as *Bull. Soc. Chim. biol.*). The country of origin is added in parentheses when needed to avoid confusion, as in *Ann. Chim.* (*France*) (Annales de Chimie) and *Ann. Chim.* (*Italy*) (Annali di Chimica), and for some titles of Japanese and translations from Russian journals, as in *Pharm. Bull.* (*Japan*) and *J. Gen. Chem.* (*U.S.S.R.*).

(*f*) The following long-established extreme abbreviations are retained: *Ber.* (since 1945 this journal has been superseded by *Chem. Ber.*); *Compt. rend.*; *Gazzetta*; *Annalen.*

NOTICES TO AUTHORS—No. 4/1968

List of Abbreviations for Periodicals most commonly found in Chemical Papers

The following list is compiled from those journals which are received in the Chemical Society Library. Since journal titles and their abbreviations are printed in italics, they must be underlined in the manuscript.

Accounts Chem. Res.
Acta Acad. Aboensis, Math. Phys.
Acta Biochim. Biophys. Acad. Sci. Hung.
Acta Biochim. Iran.
Acta Biochim. Polon.
Acta Chem. Scand.
Acta Chim. Acad. Sci. Hung.
Acta Cryst.
Acta Metallurgica
Acta Phys. Acad. Sci. Hung.
Acta Phys. et Chem. Szeged.
Acta Polytech. Scand. (Chem.)
Acta Vitaminol.
Adv. Alicyclic Chem.
Adv. Analyt. Chem. Instrumen.
Adv. Appl. Microbiol.
Adv. Carbohydrate Chem.
Adv. Catalysis
Adv. Chem. Eng.
Adv. Chem. Phys.
Adv. Clin. Chem.
Adv. Colloid Interface Sci.
Adv. Enzymol.
Adv. Fluorine Chem.
Adv. Food Res.
Adv. Free-Radical Chem.
Adv. Heterocyclic Chem.
Adv. Inorg. Chem. Radiochem.
Adv. Lipid Res.
Adv. Macromol. Chem.
Adv. Magn. Resonance
Adv. Org. Chem.
Adv. Organometallic Chem.
Adv. Pest Control Res.
Adv. Petrol. Chem.
Adv. Photochem.
Adv. Phys.
Adv. Phys. Org. Chem.
Adv. Protein Chem.
Adv. Quantum Chem.
Adv. Struct. Res. Diffraction Methods
Advancement Sci.
Afinidad
Agric. and Biol. Chem. (Japan)
Agric. Chem.
Agrokém. és Talajtan
Allg. prakt. Chem.
Ambix
Amer. Ceram. Soc. Bull.
Amer. Dyestuff Reporter
Amer. Inst. Chem. Engineers J.
Amer. J. Pharm
Amer. J. Sci.
Amer. Perfumer
Anais Acad. brasil. Cienc.
Anais Assoc. brasil. Quím.
Anal. Sti., Univ. "Al. I. Cuza" Iasi. Sect. Ic
Anales Asoc. quím. argentina
Anales Bromatol.
Anales de Quím.
Analyst
Analyt. Biochem.
Analyt. Chem.
Analyt. Chim. Acta
Analyt. Letters
Angew. Chem.
Angew. Chem. Internat. Edn.
Angew. makromol. Chem.
Ann. Acad. Sci. Fennicae
Ann. Chim. (France)
Ann. Chim. (Italy)
Ann. Endocrinol.
Ann. Fals. et Expertise chim.
Ann. Inst. Pasteur
Ann. New York Acad. Sci.
Ann. pharm. franç.
Ann. Physik
Ann. Physique
Ann. Report Fac. Pharm., Kanazawa Univ.
Ann. Report Inst. Seaweed Res.
Ann. Report ITSUU Lab.
Ann. Report Sankyo Res. Lab.
Ann. Reports Medicin. Chem.
Ann. Rev. Biochem.
Ann. Rev. Microbiol.
Ann. Rev. N.M.R. Spectroscopy
Ann. Rev. Phys. Chem.
Ann. Rev. Plant Physiol.
Ann. Soc. sci. Bruxelles
Ann. Stazione chim.-agrar. sper. Roma
Ann. Surveys Organometallic Chem.
Ann. Univ. M. Curie-Sklodowska, Sect. AA
Ann. Univ. Sci. Budapest, Sect. Chim.
Annalen
Appl. Spectroscopy
Arch. Biochem. Biophys.
Arch. Pharm.
Arch. Sci.
Arkiv. Fysik
Arkiv Kemi
Armyan. khim. Zhur.
Arzneim.-Forsch.
Atti Accad. naz. Lincei, Rend. Classe Sci. fis. mat. nat.
Austral. J. Biol. Sci.
Austral. J. Chem.
Austral. J. Phys.
Azerb. khim. Zhur.

Ber. Bunsengesellschaft Phys. Chem.
Berg- u. hüttenmänn. Montash. montan. Hochschule Leoben
Biochemistry
Biochemistry (U.S.S.R.)
Biochem. Biophys. Res. Comm.
Biochem. J.
Biochem. Pharmacol.
Biochem. Prep.
Biochem. Soc. Symp.
Biochim. appl.
Biochim. Biol. sper.
Biochim. Biophys. Acta
Biofizika
Biokhimiya
Biol. Rev. Camb. Phil. Soc.
Biopolymers
Biotechnol. and Bioeng.
Bol. Inst. Quím. agric. (Brazil)
Bol. Inst. Quím. Univ. nac. auton. Mexico
Bol. Soc. Chilena Quím.
Bol. Soc. quím. Peru
Boll. sci. Fac. Chim. ind. Bologna
Boll. Soc. ital. Biol. sper.
Botyu-Kagaku
Brennstoff-Chem.
Brit. Bull. Spectroscopy
Brit. Chem. Eng.
Brit. Chemist
Brit. Corrosion J.
Brit. J. Pharmacol.
Bul. Inst. Politeh. Iasi
Bull. Acad. polon. Sci., Sér. Sci. chim.
Bull. Acad. Sci., U.S.S.R.
Bull. Chem. Soc. Japan
Bull. Inst. Chem., Acad. Sinica
Bull. Inst. Chem. Res., Kyoto Univ.
Bull. Inst. Nuclear Sci. "Boris Kidrich"
Bull. sci., Conseil Acad. R.S.F., Yougoslavie
Bull. Soc. chim. belges
Bull. Soc. chim. Beograd
Bull. Soc. Chim. biol.
Bull. Soc. chim. France
Bull. Soc. roy. Sci. Liège

Canad. Chem. Processing
Canad. J. Biochem.
Canad. J. Chem.
Canad. J. Chem. Eng.
Canad. J. Pharm. Sci.
Canad. J. Phys.
Canad. Spectroscopy
Carbohydrate Res.
Carbon
Catalysis Rev.
Cellulose Chem. Technol.
Cereal Chem.
Cesk. Farm.
Chem. Age
Chem. analit.
Chem. and Ind.
Chem. and Pharm. Bull. (Japan)
Chem. and Phys. Carbon
Chem. and Phys. Lipids
Chem. Ber.
Chem. Comm.
Chem. Engineer
Chem. Eng.
Chem. Eng. (Japan)
Chem. Eng. News
Chem. Eng. Progr.
Chem. Eng. Progr., Monographs
Chem. Eng. Progr., Symp.
Chem. Eng. Sci.
Chem. Erde
Chem. Heterocyclic Compounds
Chem. High Polymers (Japan)
Chem. in Britain
Chem. in Canada
Chem. Ind. (Düsseldorf)
Chem. Ind. Internat.
Chem.-Ing.-Tech.
Chem. listy
Chem. Natural Compounds
Chem. Oil and Gas, Romania
Chem. Phys. Letters
Chem. Process Eng.
Chem. Processing
Chem. Processing (S. Africa)
Chem. Processing (U.S.A.)
Chem. průmysl
Chem. Rev.
Chem. Soc. Special Publ.
Chem. Stosowana
Chem. Tech. (Berlin)
Chem. Week
Chem. Weekblad
Chem.-Zig.
Chem. Zvesti
Chemist-Analyst
Chemist and Druggist
Chemistry (Quart. Chinese Chem. Soc., Formosa)
Chim. analyt.
Chimia (Switz.)
Chimica e Industria
Chimie et Industrie
Chimika Chronika
Chromatographia
Chromatog. Rev.
Ciencia
Clinical Biochem.
Clinical Chem.
Clinica Chim. Acta
Coke and Chemistry (U.S.S.R.)
Coll. Czech. Chem. Comm.
Colloid J. (U.S.S.R.)
Combustion and Flame
Comm. Fac. Sci. Univ. Ankara
Compt. rend.
Compt. rend. Acad. bulg. Sci.
Compt. rend. Soc. Biol.
Compt. rend. Soc. Phys. Hist. nat. Genève
Compt. rend. Trav. Lab. Carlsberg
Co-ordination Chem. Rev.
Corrosion
Corrosion Sci.
Croat. Chem. Acta
Current Sci.

Dansk Tidsskr. Farm.
Dechema Monograph.
Deut. Farb.-Z.
Deut. Lebensm.-Rundschau
Developments Appl. Spectroscopy
Discuss. Faraday Soc.
Diss. Abs.
Doklady Akad. Nauk Armyan. S.S.R.
Doklady Akad. Nauk Azerb. S.S.R.
Doklady Akad. Nauk S.S.S.R.
Dopovidi Akad. Nauk Ukrain. R.S.R. Ser. B.
Double-Liaison

Educ. in Chem.
Electroanalyt. Chem.
Electrochem. Technol.
Electrochim. Acta
Elektrokhimiya
Endeavour
Enzymologia
Erdöl u. Kohle
Ernährungsforschung
European J. Biochem.
European J. Steroids
European Polymer J.
Experientia

Fed. Proc.
Ferment. i spirt. Prom.
Fette, Seifen, Anstrichm.
Finska Kemistsamfundets Medd.
Fiz.-khim. Mekh. Materialov
Fiz. Metall. i Metallov.
Fluorine Chem. Rev.
Food
Food Manuf.
Food Technol.
Fortschr. Arzneim.
Fortschr. Chem. Forsch.
Fortschr. Chem. org. Naturstoffe
Fortschr. Hochpolym.-Forsch.
Fuel

Gazzetta
General Cytochem. Methods
Geokhimiya
Gidrokhim. Mat.
Giorn. Microbiol.
Glass Technol.
Grasas y Aceites

Halogen Chem.
Helv. Chim. Acta
Helv. Phys. Acta
High Energy Chem.

Ind. Chim.
Ind. chim. belge
Ind. and Eng. Chem.
Ind. and Eng. Chem. (Fundamentals)
Ind. and Eng. Chem. (Process Design)
Ind. and Eng. Chem. (Product Res. and Development)
Ind. Finishing
Ind. Lab.
Indian J. Appl. Chem.
Indian J. Biochem.
Indian J. Chem.
Indian J. Pure Appl. Phys.
Industria y Química
Ing. chim. (Bruxelles)
Inorg. Chem.
Inorg. Chim. Acta
Inorg. Chim. Acta, Rev.
Inorg. Materials
Inorg. Nuclear Chem. Letters
Inorg. Synth.
Inst. Internat. Chim. Solvay Conseil Chim.
Internat. Chem. Eng.
Internat. J. Appl. Radiation Isotopes
Internat. J. Quantum Chem.
Internat. J. Quantum Chem., Symp.
Internat. J. Radiation Biol.
Internat. Sugar J.
Internat. Z. Vitaminforsch.
Intra-Sci. Chem. Reports
Ion Exchange
Israel J. Chem.
Israel J. Technol.
Ital. J. Biochem.
Izvest. Akad. Nauk Kazakh. S.S.R., Ser. khim.
Izvest. Akad. Nauk Latv. S.S.R., Ser. khim.
Izvest. Akad. Nauk S.S.S.R., Neorg. Materialy
Izvest. Akad. Nauk S.S.S.R., Ser. khim.
Izvest. sibirsk. Otdel. Akad. Nauk, Ser. khim. Nauk

Japan Analyst
Japan Chem. Quart.
Jap. J. Pharmacol.
J. Agric. Chem. Soc. Japan
J. Agric. Food Chem.
J. Amer. Ceram. Soc.
J. Amer. Chem. Soc.
J. Amer. Leather Chemists' Assoc.
J. Amer. Oil Chemists' Soc.
J. Analyt. Chem. (U.S.S.R.)
J. Appl. Chem.
J. Appl. Chem. (U.S.S.R.)
J. Appl. Cryst.
J. Appl. Phys.
J. Appl. Polymer Sci.
J. Assoc. Offic. Analyt. Chemists
J. Assoc. Public Analysts
J. Biochem. (Japan)
J. Biol. Chem.
J. Catalysis
J. Chem. Documentation

J. Chem. Educ.
J. Chem. and Eng. Data
J. Chem. Phys.
J. Chem. Soc. (A)
J. Chem. Soc. (B)
J. Chem. Soc. (C)
J. Chem. Soc. Japan
J. Chem. Soc. Japan, Ind. Chem. Sect.
J. Chem. U.A.R.
J. Chim. phys.
J. Chinese Chem. Soc. (Formosa)
J. Chromatog.
J. Colloid Interface Sci.
J. Econ. Entomol.
J. Electroanalyt. Chem. Interfacial Electrochem.
J. Electrochem. Soc.
J. Electrochem. Soc. Japan
J. Fac. Sci. Univ., Tokyo
J. Food Sci.
J. Franklin Inst.
J. Gas Chromatog.
J. Gen. Chem. (U.S.S.R.)
J. Heterocyclic Chem.
J. Histochem. Cytochem.
J. Indian Chem. Soc.
J. Indian Inst. Sci.
J. Inorg. Nuclear Chem.
J. Inst. Brewing
J. Inst. Chemists (India)
J. Inst. Fuel
J. Inst. Petroleum
J. Inst. Rubber Ind.
J. Karnatak Univ.
J. Korean Chem. Soc.
J. Labelled Compounds
J. Less-Common Metals
J. Lipid Res.
J. Macromol. Sci.
J. Mass Spectrometry Ion Phys.
J. Materials
J. Medicin. Chem.
J. Mol. Biol.
J. Mol. Spectroscopy
J. Mol. Structure
J. Natural Sci. Math., Govt. Coll., Lahore
J. Neurochem.
J. New Zealand Inst. Chem.
J. Nuclear Materials
J. Oil Colour Chemists' Assoc.
J. Opt. Soc. Amer.
J. Org. Chem.
J. Org. Chem. (U.S.S.R.)
J. Organometallic Chem.
J. Pharm. Pharmacol.
J. Pharm. Sci.
J. Pharm. Soc. Japan
J. Pharmacol.
J. Phys. (A)
J. Phys. (B)
J. Phys. (C)
J. Phys. (E)
J. Phys. and Chem. Solids
J. Phys. Chem.
J. Phys. Soc. Japan
J. Polarog. Soc.
J. Polymer Sci., Part A-1, Polymer Chem.
J. Polymer Sci., Part A-2, Polymer Phys.
J. Polymer Sci., Part B, Polymer Letters
J. Polymer Sci., Part C, Polymer Symposia
J. prakt. Chem.
J. Proc. Roy. Soc. New South Wales
J. Quant. Spectroscopy Radiative Transfer
J. Radioanalyt. Chem.
J. Res. Inst. Catalysis, Hokkaido Univ.
J. Res. Nat. Bur. Stand., Sect. A
J. S. African Chem. Inst.
J. Sci. Food Agric.
J. Sci. Hiroshima Univ.
J. Sci. Ind. Res., India
J. Sci. Instr.
J. Soc. Cosmetic Chemists
J. Soc. Dyers and Colourists
J. Soc. Leather Trades' Chemists
J. Struct. Chem.
J. Synthetic Org. Chem., Japan
J. Textile Inst.

Khim. geterotsikl. Soedinenii
Khim. i Ind.
Khim. i neft. Mashinostr.
Khim. prirod. Soedinenii
Khim. Prom.
Khim. Volokna
Khim. vysok. Energii
Kinetics and Catalysis (U.S.S.R.)
Kinetika i Kataliz
Kolloid-Z.
Kolloid. Zhur.
Kristallografiya
Kunst. Plastics

Lab. Practice
Lipids

Macromolecules
Macromol. Rev.
Macromol. Synth.
Magyar Kém. Folyóirat
Magyar Kém. Lapja
Makromol. Chem.
Manuf. Chemist
Mededel. vlaam. chem. Ver.
Mekh. Polimerov
Melliand Textilber.
Mem. Fac. Sci. Kyushu Univ.
Mem. Inst. Protein Res., Osaka Univ.
Mem. Inst. Sci. Ind. Res., Osaka Univ.
Mém. Poudres
Methods Biochem. Analysis
Microchem. J.
Mikrochim. Acta
Mitt. deut. pharm. Ges.
Mol. Crystals
Mol. Phys.
Monatsh.

Nachr. Akad. Wiss. Göttingen, Math.-phys. Kl.
Nahrung
Nature
Naturwiss.
Neftekhimiya

Orbital
Osterr. Chem.-Ztg.
Optics and Spectroscopy
Org. Analysis
Org. Mass Spectrometry
Org. Photochem.
Org. Reaction Mech.
Org. Reactions
Org. Synth.
Organometallic Chem. Rev.
Organometallic Synth.
Oxidation and Combustion Rev.

Paint Manuf.
Paint Technol.
Pakistan J. Sci.
Pakistan J. Sci. Ind. Res.
Pakistan J. Sci. Res.
Parfümerie u. Kosmetik
Perfumery Essent. Oil Record
Periodica Polytech.
Perspectives in Structural Chem.
Pharm. Acta Helv.
Pharm. J.
Pharm. Weekblad
Pharm. Zentralhalle
Phil. Mag.
Phil. Trans.
Photochem. and Photobiol.
Photoelectric Spectromet. Group Bull.
Phys. and Chem. Earth
Phys. and Chem. Glasses
Phys. Rev.
Phys. Rev. Letters
Physica
Phytochemistry
Plastics and Polymers
Polymer
Polymer Sci. (U.S.S.R.)
Postepy Biochem.
Priklad. Biokhim. i Mikrobiol.
Proc. Acad. Sci. (U.S.S.R.)
Proc. Amer. Soc. Brewing Chemists
Proc. Brit. Ceram. Soc.
Proc. Cambridge Phil. Soc.
Proc. Indian Acad. Sci.
Proc. Japan Acad.
Proc., k. ned. Akad. Wetenschap.
Proc. Nat. Acad. Sci., India
Proc. Nat. Acad. Sci. U.S.A.
Proc. Phys. Soc.
Proc. Roy. Soc.
Proc. Roy. Soc. Edinburgh
Proc. Soc. Exp. Biol. Med.
Proc. Soil Sci. Soc. Amer.
Process Biochem.
Progr. Biophys. Mol. Biol.
Progr. Boron Chem.
Progr. Chem. and Chem. Ind.
Progr. Chem. Fats and Lipids
Progr. Inorg. Chem.
Progr. N.M.R. Spectroscopy
Progr. Nucleic Acid Res.
Progr. Org. Chem.
Progr. Phys. Org. Chem.
Progr. Polymer Sci.
Progr. Reaction Kinetics
Progr. Solid-State Chem.
Progr. Stereochem.
Przemysl Chem.
Pure Appl. Chem.
Pyrethrum Post

Quart. Reports Sulphur Chem.
Quart. Rev.
Quimica e Industria

Radiation Res.
Radiochim. Acta
Radiokhimiya
Reakts. spos. org. Soedinenii
Rec. Chem. Progr.
Rec. Trav. chim.
Recent Developments Chem. Natural Carbon Compounds
Recent Progr. Hormone Res.
Recent Progr. Surface Sci.
Recherches
Rend. Accad. Sci. fis. mat. (Napoli)
Reports Govt. Chem. Ind. Res. Inst., Tokyo
Reports Inst. Phys. Chem. Res (Japan)
Reports Progr. Phys.
Residue Rev.
Rev. Asoc. bioquím. argentina
Rev. Chim. (Roumania)
Rev. Chim. minérale
Rev. Fac. Cienc. quím., Univ. nac. La Plata
Rev. Fac. Farm. Bioquím., Univ. nac. mayor San Marcos
Rev. Fac. Sci. Univ. Istanbul Ser. C
Rev. Mod. Phys.
Rev. Phys. Chem. Japan
Rev. Port. Quím.
Rev. Prod. chim.
Rev. Pure Appl. Chem. (Australia)
Rev. Roumaine Biochim.
Rev. Roumaine Chim.
Rev. Sci. Instr.
Rev. Soc. quím. Mexico
Rev. Univ. ind. Santander Colombia
Ricerca sci.
Roczniki Chem.
Roy. Inst. Chem., Lecture Series
Roy. Inst. Chem. Rev.
Rubber Chem. Technol.
Rubber Plastics Age
Russ. Chem. Rev.
Russ. J. Inorg. Chem.
Russ. J. Phys. Chem.

Safybi
Sbornik Prác Chem. Fak. S.V.Š.T.
Schweiz. Apoth.-Ztg.
Sci. Papers Coll. Gen. Educ., Univ. Tokyo
Sci. Papers Univ. Chem. Technol., Pardubice
Sci. Papers Inst. Phys. Chem. Res., Tokyo
Sci. Proc. Royal Dublin Soc.
Sci. Reports Res. Inst., Tôhoku Univ.
Sci. Reports Tôhoku Univ.
Science
Science and Culture
Separation Sci.
Soap
Soc. Sci. Fennica, Commentationes Phys.-Math.
Soc. Sci. Lods. Acta Chim.
Soil Sci.
Soviet Phys. Cryst.
Spectochim. Acta
Sperimentale
Stärke
Stain Technol.
Standard Methods Clin. Chem.
Steroids
Structure and Bonding
Studia Univ. Babes-Bolyai, Ser. Chem.
Suomen Kem.
Surface Sci.
Svensk kem. Tidskr.
Svensk Papperstidn.
Synthetic Methods Org. Chem.

Talanta
Technol. Reports Osaka Univ.
Technol. Reports Tôhoku Univ.
Teor. i eksp. Khim.
Teor. Osnovy khim. Tekhnol.
Tetrahedron
Tetrahedron Letters
Textile Inst. and Ind.
Textile Res. J.
Theor. and Exp. Chem.
Theor. Chim. Acta
Tidsskr. Kjemi Bergvesen Met. (Kjemi)
Topics Stereochem.
Trans. Brit. Ceram. Soc.
Trans. Chalmers Univ. Technol., Gothenburg
Trans. Faraday Soc.
Trans. Inst. Chem. Engineers
Trans. Inst. Metal Finishing
Trans. J. Plastics Inst.
Trans. Roy. Soc. Canada
Transition Metal Chem.
Trudy Inst. Elektrokhim. Akad. Nauk S.S.S.R., Ural'skii Filial
Trudy Inst. khim. Akad. Nauk Azerb. S.S.R.
Trudy Inst. khim. Nauk, Akad. Nauk Kazakh. S.S.R.
Trudy Khim. i khim. Tekhnol.
Trudy Kom. analit. Khim., Akad. Nauk S.S.S.R.

Ukrain. biokhim. Zhur.
Ukrain. khim. Zhur.
Uspekhi Khim.
Uzbek. khim. Zhur.

Verhandel. k. ned. Akad. Wetenschap., Afd. Natuurk.
Vestnik Leningrad. Univ. (Fiz. Khim.)
Vestnik Moskov. Univ.
Vestnik Slovensk. kem. Drustva
Veszpremi Vegyi. Egyetem Köz.
Vitamins and Hormones
Voprosy med. Khim.
Vysokomol. Soedineniya

Wallerstein Lab. Comm.
Wiss. Z. tech. Hochschule Chem. Leuna-Merseburg

Zavodskaya Lab.
Z. analyt. Chem.
Z. anorg. Chem.
Z. Chem.
Z. Krist.
Z. Lebensm.-Untersuch.
Z. Naturforsch.
Z. phys. Chem. (Frankfurt)
Z. phys. Chem. (Leipzig)
Z. Physik
Z. physiol. Chem.
Z. Vitamin-,Hormon-,u.Ferment-forsch.
Z. wiss. Phot.
Zeszyty Nauk., Mat., Fiz., Chem.
Zeszyty Nauk. Politech. lodz. (Chem.)
Zhur. analit. Khim.
Zhur. eksp. teor. Fiz.
Zhur. E.T.F. Letters
Zhur. evol. Biokhim. i Fiziol.
Zhur. fiz. Khim.
Zhur. nauch. priklad. Fotograf. Kinemat.
Zhur. neorg. Khim.
Zhur. obshchei Khim.
Zhur. org. Khim.
Zhur. priklad. Khim.
Zhur. prikład. Spektroskopii
Zhur. strukt. Khim.
Zhur. Vsesoyuz. Khim. obshch. im. D. T. Mendeleeva

NOTICES TO AUTHORS—No. 5/1969

The International System of Units (SI)

Preamble

For many years the practice of The Society in respect of units has been based on the recommendations of a joint Committee of The Royal Society, The Chemical Society, The Faraday Society, and The Physical Society. The 1951 set of recommendations published by that Committee formed the basis of Chapter 7 of the 'Handbook for Chemical Society Authors' but since their promulgation much effort has been expended in international circles to devise and approve a basic set of coherent units. This having been completed, The Joint Symbols Committee of The Royal Society, of which The Chemical Society is a participating member, has produced a completely new set of recommendations in a pamphlet 'Symbols, Signs and Abbreviations' 1969 (copies of this pamphlet or further details can be obtained from the Managing Editor, The Chemical Society, Burlington House, London, W1V OBN). The basis of the new recommendations is the 'Système International d'Unités' (to be abbreviated to SI, in all languages).

The advantages offered by SI are as follows.

(i) It is a truly coherent system, *i.e.* the product or quotient of any two unit quantities in the system is the unit of the resultant quantity. This contrasts with the previous situation where, even in metric systems used within the same discipline, many additional units are arbitrarily and sometimes differently defined.

(ii) SI derives nearly all the quantities needed in all sciences and technologies from a very small set of base-units.

(iii) The variety of multiples and sub-multiples in common use is minimized.

(iv) A more uniform presentation can be ensured.

(v) Presentation is such that the relation of any derived unit, or multiple or sub-multiple of a derived unit, to the coherent unit is always obvious and simple.

Policy

(1) The Society announces its approval and support of SI, and its intention that SI shall become the preferred system in its publications.

(2) *Guidelines for the publications of the Society.* The Society realises that public acceptance of this system will be more a matter of education and tolerance than of dictatorial action. It nevertheless desires that the SI system and units compatible with it shall *rapidly* become the established standard in the Society's publications. An author will not be denied any reasonable usage, but if non-SI units are used for critical data or for quantities measured to a high order of accuracy (as opposed to the rough physical conditions of an experiment), the definitive values will be expressed in SI units as well.

The following will be the guidelines used:

(*a*) A metric system will always be used in preference to a non-metric one.

(*b*) The SI system will be the standard usage.

(*c*) The units used to record the *definitive* values of 'critical data' or quantities measured to high degree of accuracy will be of the SI system.

(*d*) When non-SI units are used they must be adequately explained unless their definition is obvious (*e.g.* degree Celsius, mmHg, g, h). The derivation of derived non-SI units will be indicated.

(*e*) Equations involving electrical quantities should normally be those appropriate for use with SI (rationalized m.k.s) units. If authors wish to use equations suitable for e.s.u. or e.m.u. the lack of consistency with SI units must be explicitly noted.

(3) *The principal changes.* There are four of these:

(*a*) Basic units: the metre and the kilogramme replace the centrimetre and the gramme of the old metric system.

(*b*) The unit of force is now the newton (kg m s^{-2}).

(*c*) The unit of energy is the joule and of power the joule per second (watt); thus the variously defined calories and non-metric units of energy and power are superseded.

(*d*) 'Electrostatic' and electromagnetic' units are replaced by SI electrical units.

Detail

(4) *Definition.* A quantity is expressed as the product of a numerical value and a unit.

(5) *The System.* The fully coherent SI consists of base-units, supplementary units, derived units, and decimal multiples and sub-multiples of these units, formed by use of prefixes only.

(6) *Coherent systems.* A coherent system is one based on a selected set of 'base-units' from which 'derived units' are obtained by multiplication without introducing numerical factors.

(7) *Base-units.* The name International System of Units (SI) was adopted by the Conférence Générale de Poids et Mesures in 1960 for the coherent system now based on the base-units given in Table 1.

TABLE 1

Physical quantity	*Name of base-unit*	*Symbol for unit*
length	metre	m
mass	kilogramme	kg
time	second	s
electrical current	ampere	A
thermodynamic temperature	kelvin	K
luminous intensity	candela	cd
amount of substance	mole	mol

(8) *Supplementary units.* The SI also includes two 'supplementary' *dimensionless* units as follows:

Physical quantity	*Name of unit*	*Symbol for unit*
plane angle	radian	rad
solid angle	steradian	sr

(9) *Multiples and sub-multiples.* In the SI there is one and only one basic unit for each physical quantity. Decimal fractions and multiples of these basic units may, however, be constructed by use of certain prefixes (see Table 2). They may also be used with derived SI units.

TABLE 2

Fraction	*Prefix*	*Symbol*	*Multiple*	*Prefix*	*Symbol*
10^{-1}	deci	d	10	deka	da
10^{-2}	centi	c	10^{2}	hecto	h
10^{-3}	milli	m	10^{3}	kilo	k
10^{-6}	micro	μ	10^{6}	mega	M
10^{-9}	nano	n	10^{9}	giga	G
10^{-12}	pico	p	10^{12}	tera	T
10^{-15}	femto	f			
10^{-18}	atto	a			

The combination of a prefix and a unit symbol constitutes a new single unit symbol; compounding of prefixes is not permitted.

Although it will not always be possible, particularly in Tables, the general principle should be to choose a unit (*i.e.* including multiple or sub-multiple) such that the resulting numerical value is between 0·1 and 1000.

(10) *Derived units.* Some derived units have special names and symbols, and these are given in Table 3.

TABLE 3

Physical quantity	*Name of SI unit*	*Symbol for SI unit*	*Definition of SI unit*
energy	joule	J	$kg\ m^2\ s^{-2}$
force	newton	N	$kg\ m\ s^{-2} = J\ m^{-1}$
power	watt	W	$kg\ m^2\ s^{-3} = J\ s^{-1}$
electric charge	coulomb	C	A s
electric potential difference	volt	V	$kg\ m^2\ s^{-3}A^{-1} = JA^{-1}s^{-1}$
electric resistance	ohm	Ω	$kg\ m^2\ s^{-3}A^{-2} = VA^{-1}$
electric capacitance	farad	F	$A^2s^4\ kg^{-1}\ m^{-2} = As\ V^{-1}$
magnetic flux	weber	Wb	$kg\ m^2\ s^{-2}A^{-1} = V\ s$
inductance	henry	H	$kg\ m^2\ s^{-2}A^{-2} = VA^{-1}\ s$
magnetic flux density	tesla	T	$kg\ s^{-2}A^{-1} = V\ s\ m^{-2}$
luminous flux	lumen	lm	cd sr
illumination	lux	lx	cd sr m^{-2}
frequency	hertz	Hz	s^{-1}

Others do not

Physical quantity	*SI unit*	*Symbol for SI unit*
area	square metre	m^2
volume	cubic metre	m^3
density	kilogramme per cubic metre	$kg\ m^{-3}$
velocity	metre per second	$m\ s^{-1}$
angular velocity	radian per second	$rad\ s^{-1}$
acceleration	metre per second squared	$m\ s^{-2}$
pressure	newton per square metre	$N\ m^{-2}$
kinematic viscosity, diffusion coefficient	square metre per second	$m^2\ s^{-1}$
dynamic viscosity	newton second per square metre	$N\ s\ m^{-2}$
electric field strength	volt per metre	$V m^{-1}$
magnetic field strength	ampere per metre	$A\ m^{-1}$
luminance	candela per square metre	cd m^{-2}

(11) *Symbol.* The symbol for a unit will be printed in roman (upright) type, remains unaltered in the plural and does *not* take a full point, *i.e.* 5 cm not 5 cm. or 5 cms or 5 cms.

The symbol will be separated from the numerical value by a thin space.

(12) *Decimal fractions and multiples of SI units having special names.* These names are not part of the SI, but for the time being their use in The Society's publications may continue. The list given in Table 4 is not exhaustive.

TABLE 4

Physical quantity	*Name of unit*	*Symbol unit*	*Definition of unit*
length	ångström	Å	$10^{-10}\ m = 10^{-1}\ nm$
length	micron	μm	$10^{-6}\ m$
area	barn	b	$10^{-28}\ m^2$
volume	litre	l	$10^{-3}\ m^3 = dm^3$
mass	tonne	t	$10^3\ kg = Mg$
force	dyne	dyn	$10^{-5}\ N$
pressure	bar	bar	$10^5\ N\ m^{-2}$
pressure	pascal	Pa	Nm^{-2}
energy	erg	erg	$10^{-7}\ J$
kinematic viscosity diffusion coefficient	stokes	St	$10^{-4}\ m^2\ s^{-1}$
dynamic viscosity	poise	P	$10^{-1}\ kg\ m^{-1}\ s^{-1}$
magnetic flux	maxwell	Mx	$10^{-8}\ Wb$
magnetic flux density (magnetic induction)	gauss	G	$10^{-4}\ T$
conductance	siemens	S	Ω^{-1}

(13) *Units defined in terms of the best available experimental values of certain physical constants.* These units are not part of the SI. The factors for conversion of these units to SI units are subject to change in the light of new experimental measurements of the constants involved. Their use outside the restricted contexts to which they are appropriate should be discouraged. The following list is not exhaustive.

Physical quantity	*Name of unit*	*Symbol for unit*	*Conversion factor*
energy	electronvolt	eV	$eV \approx 1{\cdot}6021 \times 10^{-19}\ J$
mass	unified atomic mass unit	u	$u \approx 1{\cdot}660\,41 \times 10^{-27}\ kg$

(14) *Other units now exactly defined in terms of the SI units.* These units are not part of the SI. It is recognized that their use may be continued for some time but it is recommended that except in special circumstances they should be progressively abandoned in conformity with international recommendations. The list given in Table 5 is by no means exhaustive. Each of the definitions given in the fourth column is *exact.*

TABLE 5

Physical quantity	*Name of unit*	*Symbol for unit*	*Definition of unit*
length	inch	in	$2{\cdot}54 \times 10^{-2}\ m$
mass	pound (avoirdupois)	lb	0·453 592 37 kg
time *	minute	min	60 s
time *	hour	h	3600 s
force	kilogramme-force	kgf	9·806 65 N
force	pound-force	lbf	9·806 65 × 0·453 592 37 N
pressure	atmosphere	atm	101 325 $N\ m^2$
pressure	conventional millimetre of mercury	mmHg	$13{\cdot}5951 \times 9{\cdot}806\ 65\ N\ m^{-2}$
pressure	torr	Torr	$(101\ 325/760)\ N\ m^{-2}$
pressure	pound-force per square inch	$lbf\ in^{-2}$	$\frac{9{\cdot}806\ 65 \times 4535{\cdot}9237}{6{\cdot}4516}\ N\ m^{-2}$
energy	kilowatt hour	kW h	$3{\cdot}6 \times 10^6\ J$
energy	thermochemical calorie	cal(thermochem.)	4·184 J
energy	I.T. calorie	cal_{IT}	4·1868 J
thermodynamic temperature	degree Rankine	°R	(5/9) K
radioactivity	curie	Ci	$3{\cdot}7 \times 10^{10}\ s^{-1}$

* Use of other common units (min, h, day) may continue in normal expressions of intervals of time.

NOTICE TO AUTHORS—No. 6/1969

Formulae and Figures

The purpose of all illustrative matter in a paper is to clarify the arguments and descriptions rather than to duplicate them. The Society strongly encourages the use of displayed formulae, particularly in the form of schemes where the details of a reaction sequence are often more easily understood when illustrated than when described in the text.

All formulae and figures should be clearly drawn, and in the case of figures provided with captions; the latter should be typed on a separate sheet. Since all formulae carry a key number by which they are identified, unless they form part of the running text or unless they are part of a scheme which itself has a caption, they are not generally further described. Blocks of formulae do not need a caption.

Illustrative matter is divided, for technical reasons, into figures and formulae, although in many cases (*e.g.* crystal structures which may be regarded as formulae but which are treated as figures) these divisions overlap.

Structural Formulae.—(*a*) Only those formulae which are displayed may be given key numbers. In all other cases the compounds concerned are referred to by name only.

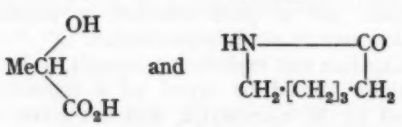
(*b*) Formulae are numbered sequentially with bold arabic numerals in parentheses [(**1**), (**2**), and (**3**) *etc.*] as they are displayed and *not* as they are mentioned in the text.

(*c*) In complex reaction schemes the formulae should be numbered serially following the reaction sequence. Non-sequential numbering in a collection of formulae can render it hard to locate an individual number.

(*d*) Structural or displayed formulae must be carefully and accurately drawn or typed on a separate sheet, rather than inserted into the text, although a marginal indication of where they are to go in the text is desirable.

(*e*) Formulae inserted into the body of the text (as distinct from those displayed separately) should be written on one line if possible, *e.g.*

$HO{\cdot}CHMe{\cdot}CO_2H$ and $\overline{NH{\cdot}[CH_2]_5{\cdot}CO}$ rather than



(*f*) Points (which may be typed as full stops) are used to indicate bonds between the atoms of the backbone chain of a compound. The symbol of each element of that chain is preceded by a full stop (or colon for a double bond) and followed by the symbols or formulae of the atoms or groups that are attached to it (parentheses being used where necessary to enclose compound groups), *e.g.* *o*-$HO{\cdot}C_6H_4{\cdot}CH_2{\cdot}NH_2$ and $CH_2Cl{\cdot}CH(OH){\cdot}CO_2H$.

Groups that are indicated by a single symbol (*e.g.* Me and Et *etc.*) do not need use of such full stops.

Repeating sequences of a backbone composite group are enclosed with square brackets and their number is indicated by an inferior multiplier, *e.g.* $HO{\cdot}[CH_2]_4{\cdot}NH_2$, but $HO{\cdot}[CH_2]_4{\cdot}N(CH_2{\cdot}OH)_2$.

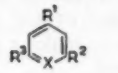
(*g*) The use of large circles to represent six delocalized π-electrons in cyclic systems (with or without positive or negative signs as appropriate) is permitted in certain circumstances. Cyclic systems with more or less than six delocalized π-electrons may be represented by formulae containing dotted lines. Both topics are dealt with in *Proceedings*, 1959, 75.

(*h*) Customary steric conventions must be observed, notably for steroids, triterpenes, and carbohydrates. The Society uses wedges (◢) or heavy lines (—) rather than blocked circles (●) and broken lines in the form – – – – – rather than ıllll.

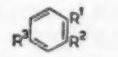
(*i*) The symbols Me, Et, Pr^n, Pr^i, Bu^n, Bu^i, Bu^s, Bu^t, Ph, Ac, Bz (the symbol for PhCO and not for $PhCH_2$), Alk, Ar, and Hal, should be used but may be written in full when the groups are involved in the reaction described. Other special symbols, if used, require an explanatory footnote. The carboxy-group is written CO_2H (*not* COOH) and similarly CO_2R.

(*j*) One variable univalent substituent is indicated by R; when more than one independently variable general substituent is present, R^1, R^2, and R^3 should be used (*not* R, R^1, R^2, R^3; or R_1, R_2, and R_3 which indicate 1 × R and multiples of R thereof).

(*k*) Often it is desirable to use one formula to represent a number of related compounds (or classes of compounds) by the use of one or more independently variable substituents. It is preferable to give each compound thus represented a separate key number rather than to subdivide individual key numbers by alphabetical suffixes [*i.e.* (**1a**), (**1b**), (**1c**) *etc.*].



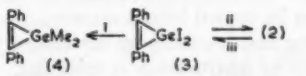
(**1**) $R^1 = R^2 = Ph$, $R^3 = Me$, X = O
(**2**) $R^1 = Me$, $R^2 = R^3 = Ph$, X = S



(**3**) $R^1 = Me$, $R^2 = Ph$, $R^3 = Bz$
(**4**) $R^1R^2 = CO{\cdot}O{\cdot}CO$, $R^3 = Ph$

The use of more than four independently variable substituents or atoms on one generalized formula is discouraged.

(*l*) Once a formula has been displayed it is permissible to employ its key number in later reaction schemes or equations rather than to re-display the formula:



Reagents: i, MeMgI; ii, NaOH; iii, HI

It should be noted that reagents and reaction conditions are given as footnotes to the scheme for economy of space; if present, an equation number is set as far to the right as possible, and if there is likelihood of

confusion with compound key-numbers it is accompanied by the word equation.

(*m*) Displayed formulae, unless they are capable of being typed on one line [see point (*e*) above], should not be included in tables; they should be displayed before the table with a key number for each compound and this should be used in the table.

(*n*) The key number for a compound may be used in the cursive text to avoid repetition of long chemical names; this device must not be used to excess. In general it is preferred if the key number is qualified by a partial name for the compound as in the following example:

'Pyolin (**1**) was oxidized by permanganate to the oxo-acid (**2**), the methyl ester (**3**) of which with methylmagnesium iodide gave the normal product (**4**)'.

(*o*) Reference to compounds in the Summary by key number alone is not allowed since a summary should be comprehensible without reference to the body of the paper itself. The reference number should, however, accompany the name of the compound to which it refers.

Figures.—(*a*) Figures must bear on the back the names of the authors, the title of the paper (abbreviated if necessary), and the number of the figure.

(*b*) Figures must be an Indian ink, on Bristol board, white smooth cartridge paper, tracing linen, plastic film (it is essential that the special plastic ink developed for this is used), or graph paper with *faint* blue lines (red or brown lines must not be present as these may be reproduced by the photographic process of block making). Since lines must be black and sharp, photostats or similar prints are often not suitable. If paper is used, it must be strong enough to withstand repeated handling.

(*c*) Lettering and numerals must be in *blue pencil* (*not* red or black pencil or ink) clearly legible but not so heavily scored as to make a permanent impression on the paper or board.

(*d*) When the figures are large (more than 8 in × 10 in), smaller copies (which may be rough, as long as they are clear) should be supplied for submission to the referees; editing will not be undertaken, however, before the final figures are received.

(*e*) Figures must be carefully drawn, preferably three times the size (linear) that seems necessary to ensure sharp printing, but excessive reduction is costly and illustrations that exceed five times the size of the finished block may be returned to the author for redrawing.

(*f*) Two-inch margins are essential all round figures. Lettering for insertion at margins should be placed well clear of the ordinate or abscissa line so that it can be copied before erasure.

Lettering and touching-up are done by the Society and clarity of instructions is essential. When there is much lettering, or complicated lettering, and always when tracing linen or plastic film is used, a rough tracing should be added with the lettering shown in ink.

(*g*) Since, for printing, the size is reduced, lines should not be too thin. Given lines must be of even thickness, angles neat, and curves smooth.

(*h*) Graphs should have only the requisite minimum of the scale (not less than three points) marked by numerals, and the scale lines should not normally be continued into the body of the figure.

(*i*) Graphs in any one paper should, when convenient, be drawn to the same scale, and scale markings should, when possible, be identical so that the graphs may be placed adjacent on the page. Contrariwise, two curves drawn to different scales can be shown on one graph by having the appropriate scales on the left-hand and the right-hand side. The use of both right- and left-hand axes and top and bottom axes on figures which have quantitative significance is encouraged.

(*j*) Experimental points must be shown sufficiently large to be distinguishable when reduced in size. Whenever possible, they should be confined to open and closed circles, crosses, squares, and triangles. Partly black circles and similar signs frequently become indistinguishable in print.

(*k*) Curves may be distinguished as full lines (——), broken (– – – –) or dotted lines (· · · ·), and dot-dash lines (— · — · —); further differentiation should normally be achieved by labelling the curves, which is, in any case, desirable.

(*l*) For reference in legends, it is preferable to mark curves A, B, C, *etc.* rather than to reproduce the type of line in print.

(*m*) There must be no unnecessary waste space, *e.g.* around curves; ordinates and abscissae should start at zero only if the curve extends to that range. Enlargement of parts of a figure can occasionally be placed in a corner of the complete figure.

(*n*) It is not advisable to insert much or complicated lettering on curves or in blank spaces; mistakes (in copying by the artist) can rarely be rectified once the block is made. It is better to label the curves A, B, C, *etc.* and to use explanatory legends.

(*o*) *Large* solid objects should be represented by hatching rather than by black surfaces, otherwise the ink may smear on printing.

(*p*) Photographs are reproduced by a half-tone process on art paper. The prints supplied must be very clear and of good contrast, as considerable definition may be lost in reproduction.

(*q*) Captions and explanatory legends, to be set by the printer should be typed on a separate page attached to the manuscript, and not given on the figure itself.

(*r*) Figures are numbered consecutively Figure 1, Figure 2, *etc.* (in arabic numerals). Photographs (half-tone reproduction) are numbered consecutively Plate 1, Plate 2, *etc.* but these numbers are independent of the numbering of any figures.

(*s*) Since figures represent an uneconomical use of space their number and size should be kept to a minimum. Figures and tables for the same values are discouraged.

NOTICES TO AUTHORS—No. 7/1970

Deposition of Data—Supplementary Publications Scheme

Preamble

The growing volume of research that produces large quantities of data, the increasing facilities for analysing such data mechanically, and the rising cost of printing are each making it very difficult to publish in the *Journal* in the normal way the full details of the experimental data which become available. Moreover, whilst there is a large audience for the general method and conclusions of a research project, the number of scientists interested in the details, and in particular in the data, of any particular case may be quite small. The National Lending Library (N.L.L.) in consultation with the Editors of scientific journals, has now developed a scheme whereby such data and detail may be stored and then copies made available on request at the N.L.L., Boston Spa. The Chemical Society is a sponsor of this scheme and has indicated to the National Lending Library its wish to use the facilities being made available in this ' Supplementary Publications Scheme '.

Bulk information (such as crystallographic structure factor tables, computer programmes and output, evidence for amino-acid sequences, spectra, *etc.*), which accompany papers published in future issues of the Chemical Society's *Journal* may in future be deposited, free of charge, with the Supplementary Publications Scheme, either at the request of the author and with the approval of the referees or on the recommendation of referees and the approval of the author.

The Scheme

Under this scheme, authors will submit articles and the supplementary material to the Journal simultaneously in the normal way, and both will be refereed. If the paper is accepted for publication the supplementary material will be sent by the Society to the National Lending Library where it will be stored on microfiche. Microfiche and enlarged copies will be obtainable by individuals both in the U.K. and abroad on quoting a supplementary publication number that will appear in the parent article. Difficult or oversized material may only be available as 35 mm microfilm or enlarged copies.

The Microfiche

A single microfiche will accommodate 58 pages in microform, plus an eye-visible title; additional pages are accommodated on numbered ' trailer ' fiches, each holding 69 pages. The eye-visible title on the first microfiche will comprise the supplementary publication number (see below), the authors' names, and the bibliographic reference to the parent article which the microfiche supplements.

Authors will be responsible for the preparation of camera-ready copy according to the following specifications (although the Society will be prepared to help in case of difficulty).

(*a*) Optimum page size for text or tables in typescript: up to 30 cm × 21 cm.
(*b*) Limiting page size for text or tables in typescript: 33 cm × 24 cm.
(*c*) Limiting size for diagrams, graphs, spectra, *etc.*: 39 cm × 28·5 cm.
(*d*) Tabular matter should be headed descriptively on the first page, with column headings recurring on each page.
(*e*) Pages should be clearly numbered to ensure the correct sequence of frames on the microfiche.

It is recommended that all material which is to be deposited should be accompanied by some prefatory text. Normally this will be the summary from the parent paper and authors will greatly aid the deposition of the material if a duplicate copy of the summary is provided. If authors have the facilities available the use of a type face designed to be read by computers is encouraged.

Deposition

The Society will be responsible for the deposition of the material with the National Lending Library. The N.L.L. will not receive material direct from authors since the Library wishes to ensure that the material has been properly and adequately refereed.

Action by the Society

The Society will receive a manuscript for publication together with any supplementary material for deposition and will circulate all of this to referees in the normal way. When the edited manuscript is sent to the printers the supplementary material will be sent for deposition to the National Lending Library who will issue the necessary publication number. The Society will add to the paper, at the galley proof stage, a footnote indicating what material has been deposited in the Supplementary Publications Scheme, the number of microfiches it occupies, the supplementary publication number, and details as to how copies may be obtained.

Availability

This supplementary material will be available either as microfiche or as a photographic enlargement, from the National Lending Library's photocopying service. This works on a prepaid, flat rate, coupon basis.

The present coupon purchases one or two microfiches of the same item, or 1—10 pages of enlargement from the same item (or, where appropriate, 1—20 pages from the same item on 35 mm microfilm). The present coupon costs are:

United Kingdom	£10 for 50 coupons (or 25 new p each)
Europe, excluding U.K.	£6 for 20 coupons (or 30 new p each)
Elsewhere	£8·50 for 20 coupons (or 42½ new p each)

The cost includes postage; outside the U.K. all items are sent by airmail.

It is realised that not all users will want to purchase 50 coupons at a time. The Society is therefore prepared to act as agent and hold coupons which may then be purchased from the Society at the prices quoted above.

In all correspondence with the National Lending Library or the Society authors must cite the supplementary publications number.

International Collaboration

A similar scheme (known as the National Auxiliary Publications Service) is being operated in the U.S.A. by the American Society for Information Science. Similar schemes are also being contemplated in other countries. The provision of reciprocal arrangements for the exchange of supplementary data between the various national deposition centres is being investigated.

NOTICES TO AUTHORS—No. 8/1970

X-Ray Crystallographic Structure Factor Tables

The Society has recently taken advice from the members of its Chemical Crystallography Group and as a result of this and of the inception of the National Lending Library Supplementary Publications Scheme (discussed in Notices to Authors No. 7) the following rules are being taken into use forthwith to govern the publication or deposition of *X*-ray crystallographic structure factor tables.

(i) The Society will no longer publish tables of structure factors in its publications except in accordance with the provision of paragraph (iv) below.

(ii) All authors of crystallography papers will submit along with the manuscript a readable table of such structure factors for the referees' inspection. The table should be prepared in accordance with the detail given in paragraph 3 of Notices to Authors No. 7 so that it may be used for deposition. Computer printout may be used providing that it is top copy in good contrast (see note).

(iii) If the referees accept the paper and its associated structure factor tables then the Society will deposit these structure factor tables in the National Lending Library Supplementary Publications Scheme (see Notices to Authors No. 7) and will publish as a footnote to the paper the necessary details that will enable any reader to obtain a copy in microfiche or an electrophotographic printoff of the data tables associated with the paper.

(iv) Authors, or the referees, may request publication of such tables of structure factors, *in extenso*, in cases that seem to them to be desirable. It is expected that this will occur only rarely.

(v) The details of the National Lending Library Supplementary Publications Scheme and the methods for obtaining microfiche or photographic printoff of material deposited with that scheme are given in Notices to Authors No. 7.

Note to paragraph (*ii*). Structure factor tables prepared from computer printout must be presented in the form indicated in paragraph 3 of Notices to Authors No. 7 and must be arranged with the greatest economy of space possible [*i.e.* not less than two groups of columns (h, k, l, F_c, F_o) to the page (30 cm × 21 cm)]. All columns must be headed. A 'paste-up' on white card of computer printout will be acceptable providing the quality of the printout is adequate.

ERRATA. Section C

1966, page 918, Table 2. Experiment (11) should *read*

(11)	1·0	,,	,,

1969, page 339, left hand column, line 4 *. *For* 9·3 (m, 7-H) *read* 9·3 (m, 4-H); also *for* 8·25 (7-H, complex) *read* 8·25 (7H complex).

---

page 2376, title. *For* Part VIII, *read* Part X. Reference 1 should *read* Part IX, D. J. Berry and B. J. Wakefield, *J. Chem. Soc.* (*C*), 1969, 2342.

---

page 2729, left hand column. The structure for identifying compounds (XVII) and (XVIII) should *be*

1970, page 193. Reference 1 should *read* Part X, J. D. Cook and B. J. Wakefield, *J. Chem. Soc.* (*C*), 1969, 2376.

page 194. Reference 11 should *read* 1970, **11**, 178.

page 195. Reference 13 should *read* See ref. 1.

---

page 285, right hand column, line 20. *For* acetoacetate *read* oxaloacetate. Line 12 *. *For* acetoacetate *read* oxaloacetate.

---

page 918, right hand column, line 18. *For* (0·64 g., *read* (1·27 g.,

page 919, left hand column, lines 11, 22, 29, and 44. *For* (0·32 g., *read* (0·64 g.,

---

page 1296, Summary, line 2. *For* (*O*-acetoxyphenoxy) *read* (*O*-hydroxyphenoxy).

page 1297, left hand column, line 30. *For* 2-*amino*-1,4- *read* 2-*imino*-1,4-.

---

page 1414, left hand column, line 12 *. *For* units becomes 0·21 *read* units becomes 0·28.

---

page 1451, left hand column, line 23. *For* (+)-caran-*cis*-5-one *read* (+)-*cis*-caran-5-one. Line 25. *For* (XI) (62%) *read* (IX) (162%).

---

page 1686, title. *For* A. Hassaniali-Walji *read* A. Hassanaili-Walji.

---

page 1827, left hand column, line 13 *. *For* and 3170 *read* and 3520.

page 1829, left hand column, line 6. *For* 3170 (NH_2) *read* 3520 (NH_2).

---

page 2004, left hand column, line 5. *For* deca-1,4,9-triene *read* deca-2,4,9-triene. Line 18. *For* deca-1,6,9-triene *read* deca-1,6,8-triene.

---

page 2274, reference 9(*b*) should *read* J. W. Blunt, M. P. Hartshorn, and D. N. Kirk, *Tetrahedron Letters*, 1966, 2125.

---

page 2340, Under (1) *Simple Compounds*—(+)-Tartaric acid. Reference should *read Nature*, 1969, **222**, 54.

---

page 2399, Table 3, line 4, substituent 7α-OH. In column 4 *for* +0·7 *read* +0·07.

Steroids. Part XXXV appearing on page 1893 of this year should be Part XXXVII. The previous parts which appeared on the following pages are in the correct sequence,

Part XXXIV	page 558
Part XXXV	page 1443
Part XXXVI	page 1513
Part XXXVII	page 1893

---

* From foot of main text.

JOURNAL
OF
THE CHEMICAL SOCIETY

SECTION C
Organic Chemistry

Part I, pp. 1—996

LONDON: THE CHEMICAL SOCIETY
1970

COPYRIGHT RESERVED

Printed in Great Britain by
Richard Clay (The Chaucer Press), Ltd.,
Bungay, Suffolk

JOURNAL
OF
THE CHEMICAL SOCIETY

SECTION C
Organic Chemistry

Part II, pp. 997—1884

LONDON: THE CHEMICAL SOCIETY
1970

COPYRIGHT RESERVED

Printed in Great Britain by
Richard Clay (The Chaucer Press), Ltd.,
Bungay, Suffolk

JOURNAL
OF
THE CHEMICAL SOCIETY

SECTION C
Organic Chemistry

Part III, pp. 1885—2708, Notices to Authors, and indexes

LONDON: THE CHEMICAL SOCIETY
1970

COPYRIGHT RESERVED

Printed in Great Britain by
Richard Clay (The Chaucer Press), Ltd.,
Bungay, Suffolk

PUBLICATIONS BOARD

Chairman

Sir Ewart Jones, M.A., D.Sc., F.R.I.C., F.R.S.

J. W. Barrett, Ph.D., A.R.C.S., F.R.I.C.
D. H. R. Barton, D.Sc., Ph.D., Sc.D., F.R.S.
L. Crombie, D.Sc., F.R.I.C.
C. Eaborn, Ph.D., D.Sc., F.R.I.C.
C. Kemball, Sc.D., M.R.I.A., F.R.S.E., F.R.S.
W. Klyne, M.A., D.Sc., F.R.I.C.
Sir Ronald Nyholm, D.Sc., F.R.I.C., F.R.S.
W. G. Overend, Ph.D., D.Sc., F.R.I.C.
G. Porter, Ph.D., Sc.D., F.R.S.
R. A. Raphael, D.Sc., F.R.I.C., F.R.S.
J. R. Ruck Keene, M.B.E., T.D., M.A.
D. H. Whiffen, M.A., D.Phil., F.R.S.
W. Wild, B.Sc., Ph.D., A.R.I.C.

Managing Editor and Secretary

L. C. Cross, T.D., Ph.D., A.R.C.S., F.R.I.C.

PRIMARY JOURNALS COMMITTEE

Chairman

Sir Ronald Nyholm, D.Sc., F.R.I.C., F.R.S.

P. Bladon, B.Sc., Ph.D., F.R.I.C.
G. C. Bond, B.Sc., Ph.D., F.R.I.C.
J. I. G. Cadogan, D.Sc., F.R.I.C., F.R.S.E.
A. G. Davies, Ph.D., D.Sc., F.R.I.C.
J. Elks, D.Sc., D.I.C., A.R.C.S., F.R.I.C.
G. W. A. Fowles, Ph.D., D.Sc., F.R.I.C.
F. Glockling, B.Sc., Ph.D., D.Sc.
R. F. Hudson, Ph.D., D.I.C., A.R.C.S.
A. R. Katritzky, D.Phil., Sc.D., F.R.I.C.
G. Lowe, A.R.C.S., M.A., Ph.D.
G. R. Martin, B.Sc., A.R.C.S., F.R.I.C.
R. Mason, B.Sc., Ph.D.
R. O. C. Norman, M.A., D.Phil., D.Sc.
W. D. Ollis, B.Sc., Ph.D., F.R.I.C.
R. C. Pink, D.Sc., A.R.I.C.
J. E. Prue, M.A., D.Phil.
L. E. J. Roberts, M.A., D.Phil.
F. J. C. Rossotti, M.A., B.Sc., Ph.D.
G. Sim, B.Sc., Ph.D.
F. Sondheimer, Ph.D., A.R.C.S., F.R.S.
T. C. Waddington, M.A., Ph.D.
E. P. H. Young, M.Sc., Ph.D.

Managing Editor and Secretary

L. C. Cross, T.D., Ph.D., A.R.C.S., F.R.I.C.

Editor

E. R. Smith, Ph.D., A.R.I.C.

Assistant Editor

A. D. McNaught, M.A., Ph.D.

The Chemical Society
Specialist Periodical Reports
now Available

Carbohydrate Chemistry

Senior Reporter:
Dr R. D. Guthrie,
University of Sussex

Volume 3 297 pp. Price £7

Spectroscopic Properties of Inorganic and Organometallic Compounds

Senior Reporter:
Professor N. N. Greenwood,
University of Newcastle upon Tyne

Volume 3 527 pp. Price £10

Amino-acids, Peptides, and Proteins

Senior Reporter:
Dr G. T. Young,
University of Oxford

Volume 2 258 pp. Price £6

Photochemistry

Senior Reporter:
Professor D. Bryce-Smith,
University of Reading

Volume 1 470 pp. Price £6
(Volume 2 due February, 1971)

Organophosphorus Chemistry

Senior Reporter:
Professor S. Trippett,
University of Leicester

Volume 1 333 pp. Price £4
(Volume 2 due March, 1971)

Electrochemistry

Senior Reporter:
Professor G. J. Hills,
University of Southampton

Volume 1 274 pp. Price £7

Organic Compounds of Sulphur, Selenium, and Tellurium

Senior Reporter:
Dr D. H. Reid,
University of St. Andrews

Volume 1 493 pp. Price £11

Earlier volumes of these titles, where applicable, are available. Fellows of the Chemical Society and members of the Royal Institute of Chemistry may obtain these publications at reduced rates.

These regular topical reviews give comprehensive, critical coverage of the world's literature.
Enquiries and orders should be addressed to:

The Publications Sales Officer, The Chemical Society, Blackhorse Road, Letchworth, Herts, SG6 1HN, England.

Printed in Great Britain by Richard Clay (The Chaucer Press), Ltd., Bungay, Suffolk